Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(31)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Spodosol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthods (*Orth*, meaning true, plus *ods*, from Spodosols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplorthods (*Hapl*, meaning minimal horizonation, plus *orthods*, the suborder of the Spodosols that is most common).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplorthods.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine loamy-skeletal, mixed, mesic Typic Haplorthods.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the underlying material can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(29)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(31)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Alderwood Series

The Alderwood series consists of moderately well drained soils formed in dense glacial till. These soils are moderately deep to ortstein. They are in glacially modified areas on foothills and in valleys. Slopes are 6

to 30 percent. The average annual precipitation is 35 to 50 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 190 to 210 days.

These soils are loamy-skeletal, mixed, mesic, ortstein Aquic Haplorthods.

Typical pedon of Alderwood gravelly loam, 6 to 15 percent slopes, in King County, about 5 miles southeast of Issaquah, 1,300 feet east and 2,200 feet north of the southwest corner of sec. 24, T. 23 N., R. 6 E.

Oa—1.5 inches to 0; decomposed needles and leaves.
A—0 to 1 inch; dark brown (10YR 3/3) gravelly loam, yellowish brown (10YR 5/4) dry; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and common coarse roots; few very fine irregular pores; about 30 percent pebbles; strongly acid; clear smooth boundary.
Bs1—1 to 6 inches; dark brown (10YR 4/3) gravelly loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; few fine irregular pores; about 30 percent pebbles; moderately acid; clear wavy boundary.
Bs2—6 to 12 inches; dark yellowish brown (10YR 3/4) very gravelly loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine irregular pores; about 35 percent pebbles; moderately acid; clear wavy boundary.
Bs3—12 to 20 inches; dark yellowish brown (10YR 3/4) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and common medium and coarse roots; common very fine and few fine irregular pores; about 35 percent pebbles and 10 percent cobbles; strongly acid; clear wavy boundary.
BC—20 to 33 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam, light olive brown (2.5Y 5/4) dry; massive; hard, firm, slightly sticky and slightly plastic; common fine and medium roots; common fine irregular pores; about 40 percent pebbles and 10 percent cobbles; moderately acid; abrupt smooth boundary.
Bsm—33 to 38 inches; grayish brown (2.5Y 5/2) ortstein that crushes to very gravelly sandy loam, light gray (2.5Y 7/2) dry; massive; very hard, firm, slightly sticky and slightly plastic; common medium and many coarse roots; common fine and medium irregular pores; about 35 percent pebbles and 10 percent cobbles; strongly acid; abrupt smooth boundary.
Cd—38 to 60 inches; grayish brown (2.5Y 5/2), dense glacial till that crushes to very gravelly sandy loam, light gray (2.5Y 7/1) dry; massive; very hard, firm, slightly sticky and slightly plastic; common fine and medium pores; about 25 percent pebbles and 10 percent cobbles; strongly acid.

The depth to ortstein ranges from 20 to 40 inches. The thickness of the solum ranges from 18 to 30 inches. The content of rock fragments in the particle-size control section ranges from 35 to 50 percent. It includes 0 to 10 percent cobbles.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 3 or 4 when moist and dry.

The Bs horizon has value of 3 or 4 when moist and 4 to 6 when dry and chroma of 3 or 4 when moist and dry. It is gravelly loam, very gravelly loam, or very gravelly sandy loam.

The BC horizon has hue of 10YR or 2.5Y, value of 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

The Bsm and Cd horizons are ortstein and dense glacial till, respectively. They crush to very gravelly loam or very gravelly sandy loam. They have value of 4 or 5 when moist and 6 or 7 when dry and chroma of 1 or 2 when moist and dry.

Alkiridge Series

The Alkiridge series consists of moderately well drained soils formed in volcanic ash and pumice over dense glacial till. These soils are moderately deep to dense glacial till. They are in cirque basins and on valley floors. Slopes are 8 to 30 percent. Elevation is 2,700 to 3,700 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 110 to 130 days.

These soils are ashy over loamy-skeletal Typic Cryorthods.

Typical pedon of Alkiridge sandy loam, 8 to 30 percent slopes, in Pierce County, about 1 mile southwest of Frog Mountain along Forest Service Road 1819B, 900 feet south and 2,600 feet east of the northwest corner of sec. 14, T. 18 N., R. 8 E.

Oi&Oe—1 inch to 0; fresh and partially decomposed, loose forest litter, including needles, moss, bark, and old roots.
A1—0 to 1 inch; very dark gray (10YR 3/1) loamy sand (volcanic ash), dark gray (10YR 4/1) dry; single

grain; loose, nonsticky and nonplastic; weakly smeary; many very fine and fine and common medium and coarse roots; about 5 percent hard subangular pebbles and 10 percent hard cinders; strongly acid; abrupt wavy boundary.

A2—1 to 7 inches; dark brown (10YR 3/3) sandy loam (volcanic ash), brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, common fine, and few coarse and medium roots; about 10 percent hard subangular pebbles and 10 percent hard cinders; moderately acid; abrupt smooth boundary.

Bhs—7 to 18 inches; dark brown (7.5YR 3/4) gravelly sandy loam, strong brown (7.5YR 5/6) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and few fine roots; about 20 percent hard subangular pebbles and 5 percent hard cinders; moderately acid; clear wavy boundary.

2BC1—18 to 28 inches; dark yellowish brown (10YR 4/4) very gravelly loam, very pale brown (10YR 7/4) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine and few fine roots; about 30 percent subangular pebbles and 5 percent cobbles; slightly acid; clear wavy boundary.

2BC2—28 to 37 inches; olive brown (2.5Y 4/4) very gravelly loam, pale yellow (2.5Y 7/4) dry; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; about 40 percent subangular pebbles and 10 percent cobbles; slightly acid; clear smooth boundary.

2Cd—37 inches; brown (10YR 4/3), dense glacial till that breaks to very gravelly sandy loam, pale brown (10YR 6/3) dry; massive; hard, firm, slightly sticky and slightly plastic; weakly smeary; about 40 percent hard subangular pebbles, 10 percent cobbles, and 5 percent stones; slightly acid.

The depth to dense glacial till is 20 to 40 inches. The spodic horizon is 8 to 11 inches thick. The particle-size control section ranges from 35 to 60 percent coarse fragments and 5 to 10 percent hard cinders.

The A horizon has value of 2 or 3 when moist and 3 to 5 when dry and chroma of 1 to 3 when moist and dry. It is more than 60 percent coarse volcanic ash. Reaction is strongly acid or moderately acid.

The Bhs horizon has hue of 10YR or 7.5YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. It is gravelly sandy loam or very gravelly sandy loam and contains coarse volcanic ash. It is 20 to 30 percent pebbles, 0 to 5 percent cobbles, and 0 to 10 percent hard cinders. Reaction is strongly acid or moderately acid.

The 2BC horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is 30 to 40 percent pebbles and 5 to 10 percent cobbles. Reaction is moderately acid or slightly acid.

The 2Cd horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. When crushed, it is very gravelly loam or very gravelly sandy loam. It is 30 to 40 percent pebbles, 10 to 15 percent cobbles, and 5 to 10 percent stones.

Altapeak Series

The Altapeak series consists of deep, well drained soils formed in volcanic ash and pumice mixed with residuum and colluvium over granitic and metamorphic rocks. These soils are on mountain slopes. Slopes are 8 to 90 percent. Elevation is 3,600 to 5,600 feet. The average annual precipitation is 80 to 130 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 90 to 110 days.

These soils are sandy-skeletal, mixed Typic Cryorthods.

Typical pedon of Altapeak gravelly sandy loam, 8 to 30 percent slopes, in King County, about 200 feet west of a spur on Forest Service Road 2291A, 1,000 feet south and 900 feet east of the northwest corner of sec. 28, T. 22 N., R. 10 E.

Oi—3 to 2 inches; loose forest litter, including needles, twigs, bark, and moss.

Oa—2 inches to 0; black (10YR 2/1), highly decomposed organic material that is matted and bound by roots; abrupt wavy boundary.

E—0 to 2 inches; pinkish gray (7.5YR 6/2) loamy sand (volcanic ash and pumice), light gray (N 7/0) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine roots; many very fine and fine interstitial pores; NaF pH 9.2; very strongly acid; abrupt wavy boundary.

Bhs—2 to 16 inches; dark reddish brown (2.5YR 2/4) and yellowish red (5YR 5/8) very gravelly sandy loam that has a mixture of volcanic ash and pumice; strong brown (7.5YR 5/6) and reddish brown (5YR 4/4) dry; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine and fine interstitial pores; about 15 percent

cobbles and 20 percent pebbles and hard cinders; NaF pH 12.0; moderately acid; clear irregular boundary.

Bs—16 to 24 inches; strong brown (7.5YR 5/6) very cobbly loamy sand, reddish yellow (7.5YR 6/6) dry; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; about 20 percent cobbles and 20 percent pebbles; NaF pH 12.0+; moderately acid; clear smooth boundary.

2C1—24 to 33 inches; pale yellow (2.5Y 7/4) extremely cobbly loamy sand, very pale brown (10YR 7/3) dry; massive; hard, friable, slightly sticky and nonplastic; nonsmeary; common fine roots; common very fine and fine interstitial pores; about 15 percent pebbles and 45 percent cobbles; NaF pH 11.5; moderately acid; gradual smooth boundary.

2C2—33 to 50 inches; grayish brown (2.5Y 5/2) extremely gravelly coarse sand, light brownish gray (2.5Y 6/2) dry; massive; hard, friable; nonsmeary; few fine roots; about 45 percent pebbles and 25 percent cobbles; NaF pH 11.5; slightly acid; gradual irregular boundary.

2Cr—50 inches; grayish brown (2.5Y 5/2), highly weathered granodiorite that breaks to very gravelly coarse sand; light brownish gray (2.5Y 6/2) dry; can be dug by a spade with difficulty; about 65 percent hard pebbles; slightly acid.

The depth to paralithic contact is 40 to 60 inches. The content of rock fragments, including hard cinders, in the control section ranges from 35 to 70 percent by volume. Bedrock is granitic rock or low-grade metamorphic rock, including slate and phyllite.

The E horizon has hue of 5YR or 7.5YR or is neutral in hue. It has value of 5 to 7 when moist and 6 or 7 when dry and chroma of 0 to 2 when moist and dry. Reaction is strongly acid or very strongly acid.

The Bhs horizon has hue of 2.5YR or 5YR when moist and 5YR or 7.5YR when dry, value of 2 to 5 when moist and 4 or 5 when dry, and chroma of 4 to 8 when moist and 4 to 6 when dry. It is sandy loam or loam in the fine-earth fraction. It has 15 to 45 percent coarse fragments, including hard cinders.

The Bs horizon has value of 4 or 5 when moist and 5 or 6 when dry and chroma of 4 to 6 when moist and dry. It is very cobbly loamy sand, very gravelly loamy sand, or very gravelly sandy loam. Reaction is slightly acid to strongly acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 5 to 7 when moist and dry, and chroma of 2 to 4 when moist and 2 or 3 when dry. It is loamy sand, coarse sand, or loamy coarse sand in the fine-earth fraction. It has 45 to 75 percent coarse fragments by volume. Reaction is slightly acid to strongly acid.

Andic Cryumbrepts

Andic Cryumbrepts consist of moderately deep to very deep, well drained soils formed in volcanic ash, glacial till, and colluvium derived from basalt and andesite. They are on cirque sidewalls. Slopes are 30 to 90 percent. Elevation is 4,000 to 6,500 feet. The average annual precipitation is 80 to 120 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 90 to 110 days.

Typical pedon of Andic Cryumbrepts, 30 to 90 percent slopes, in King County, about 1 mile north of Blowout Mountain, 2,200 feet east and 1,200 feet north of the southwest corner of sec. 11, T. 19 N., R. 12 E.

Oi—0.5 inch to 0; undecomposed needles, leaves, and twigs.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) very gravelly sandy loam, grayish brown (10YR 5/2) dry; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; about 50 percent pebbles; strongly acid; clear smooth boundary.

Bw1—5 to 16 inches; dark yellowish brown (10YR 3/4) very gravelly sandy loam, yellowish brown (10YR 5/4) dry; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; many fine irregular pores; about 50 percent pebbles; strongly acid; diffuse smooth boundary.

Bw2—16 to 44 inches; dark brown (7.5YR 3/4) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine irregular pores; about 60 percent pebbles; strongly acid; abrupt smooth boundary.

R—44 inches; andesite.

The depth to bedrock is 20 to 60 inches. The content of rock fragments in the particle-size control section ranges from 25 to 75 percent. The umbric epipedon is 7 to 15 inches thick.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry. The Bw horizon has hue of

7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam, very gravelly loam, very gravelly sandy loam, or extremely gravelly sandy loam.

Arents

Arents consist of moderately deep to very deep, moderately well drained to somewhat excessively drained soils formed in a mixture of volcanic ash and a variety of glacial deposits. They are on terraces and drift plains. Slopes are 0 to 8 percent. Elevation is 1,000 to 3,000 feet. The average annual precipitation is 40 to 95 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 100 to 150 days.

Typical pedon of Arents, 0 to 8 percent slopes, in King County, about 3.5 miles southeast of Enumclaw, 900 feet east and 1,600 feet south of the northwest corner of sec. 28, T. 20 N., R. 7 E.

C1—0 to 35 inches; about 80 percent gravelly sandy loam that is dominantly dark yellowish brown (10YR 4/4) but is variegated and 20 percent dark brown (7.5YR 4/4) very gravelly loam; very pale brown (10YR 7/4) and light brown (7.5YR 6/4) dry; massive; loose, nonsticky and nonplastic; about 30 percent pebbles and 5 percent cobbles; moderately acid; gradual smooth boundary.

C2—35 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly sand, very pale brown (10YR 7/4) dry; single grain; loose; many medium irregular pores; about 60 percent pebbles and 10 percent cobbles; moderately acid.

The content of rock fragments in the particle-size control section ranges from 20 to 70 percent. The depth to dense glacial till ranges from 30 to more than 60 inches. The soils are gravelly sandy loam to extremely gravelly coarse sand. The C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 2 to 6 when moist and dry.

Barneston Series

The Barneston series consists of very deep, somewhat excessively drained soils formed in a mixture of volcanic ash and glacial outwash. These soils are on terraces and terrace escarpments. Slopes are 0 to 65 percent. Elevation is 500 to 1,400 feet. The average annual precipitation is 50 to 75 inches, and the mean annual air temperature is about 48 degrees F. The frost-free period is 160 to 190 days.

These soils are sandy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Barneston gravelly coarse sandy loam, 6 to 30 percent slopes, in Pierce County, about 6.5 miles southwest of Orting, 2,200 feet south and 2,300 feet west of the northeast corner of sec. 27, T. 18 N., R. 5 E.

Oi—2 inches to 1 inch; undecomposed needles, leaves, and twigs; about 20 percent pebbles.

Oa—1 inch to 0; black (10YR 2/1), decomposed roots, needles, and twigs; about 20 percent pebbles.

E—0 to 9 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, light gray (10YR 7/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium and coarse roots; many fine irregular pores; about 30 percent pebbles; strongly acid; clear smooth boundary.

Bs—9 to 14 inches; dark yellowish brown (10YR 3/4) very gravelly sandy loam, pale brown (10YR 6/3) dry; single grain; loose; many very fine and fine, common medium, and few coarse roots; many fine irregular pores; about 30 percent pebbles and 10 percent cobbles; strongly acid; clear smooth boundary.

2CB—14 to 21 inches; dark brown (7.5YR 4/4) and dark yellowish brown (10YR 4/4) extremely gravelly sand, very pale brown (10YR 7/4) dry; single grain; loose; common fine and few coarse roots; many medium irregular pores; about 50 percent pebbles and 20 percent cobbles; strongly acid; gradual smooth boundary.

2C—21 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly sand, very pale brown (10YR 7/4) dry; single grain; loose; many medium irregular pores; about 60 percent pebbles and 20 percent cobbles; strongly acid.

The thickness of the solum is 14 to 25 inches. The content of rock fragments in the particle-size control section ranges from 50 to 70 percent.

The E horizon has value of 2 to 4 when moist and 5 to 7 when dry and chroma of 1 to 3 when moist and dry. The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly sandy loam or very gravelly sand.

The 2CB horizon has hue of 7.5YR, 10YR, or 2.5Y, and the 2C horizon has hue of 10YR or 2.5Y. Both horizons have value of 4 or 5 when moist and 5 to 7 when dry and chroma of 2 to 4 when moist and dry. They are extremely gravelly sand or extremely gravelly loamy sand.

Beausite Series

The Beausite series consists of well drained soils formed in glacial till and colluvium derived dominantly from sandstone. These soils are moderately deep to sandstone. They are on foothills. Slopes are 6 to 90 percent. Elevation is 600 to 1,500 feet. The average annual precipitation is 30 to 50 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 180 to 210 days.

These soils are loamy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Beausite gravelly loam, 30 to 65 percent slopes, in King County, about 3.5 miles northeast of Maple Valley, 2,300 feet north and 2,700 feet east of the southwest corner of sec. 31, T. 23 N., R. 7 E.

Oi&Oa—2 inches to 0; fresh and partially decomposed duff and litter.

A—0 to 5 inches; black (10YR 2/1) gravelly loam, very dark grayish brown (10YR 3/2) dry; moderate fine granular structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; about 30 percent pebbles; moderately acid; abrupt smooth boundary.

AB—5 to 11 inches; dark brown (10YR 3/3) very gravelly sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine irregular pores; about 50 percent pebbles; moderately acid; clear wavy boundary.

Bs1—11 to 21 inches; dark brown (7.5YR 4/4) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine irregular pores; about 55 percent pebbles and 25 percent cobbles; moderately acid; gradual wavy boundary.

Bs2—21 to 29 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many fine irregular pores; about 65 percent pebbles and 15 percent cobbles; moderately acid; gradual smooth boundary.

BC—29 to 36 inches; light olive brown (2.5Y 5/4) extremely gravelly sandy loam, white (2.5Y 8/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; few medium and coarse roots; many fine irregular pores; about 70 percent pebbles; moderately acid; abrupt irregular boundary.

R—36 inches; sandstone.

The depth to bedrock ranges from 24 to 40 inches. The content of rock fragments in the particle-size control section ranges from 50 to 70 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 or 4 when dry, and chroma of 1 or 2 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 to 7 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly sandy loam, very gravelly loam, or extremely gravelly sandy loam.

The BC horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 3 or 4 when moist and dry. It is extremely gravelly loam or extremely gravelly sandy loam.

Belfast Series

The Belfast series consists of very deep, moderately drained soils formed in alluvium. These soils are on terraces. Slopes are 0 to 2 percent. Elevation is 50 to 120 feet. The average annual precipitation is 50 to 60 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-loamy, mixed, nonacid, mesic Aquic Xerofluvents.

Typical pedon of Belfast silt loam, 0 to 2 percent slopes, in King County, about 4 miles south of Carnation, 1,000 feet north and 1,800 feet west of the southeast corner sec. 4, T. 24 N., R. 7 E.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many coarse and common fine irregular and common coarse tubular pores; moderately acid; clear smooth boundary.

C1—7 to 16 inches; brown (10YR 4/3) silt loam, very pale brown (10YR 7/3) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many coarse and common fine irregular and common coarse tubular pores; moderately acid; gradual smooth boundary.

C2—16 to 25 inches; brown (10YR 5/3) fine sandy loam, very pale brown (10YR 7/3) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common

very fine roots; many coarse and common fine irregular and common coarse tubular pores; slightly acid; gradual smooth boundary.

C3—25 to 38 inches; pale brown (10YR 6/3) fine sandy loam, very pale brown (10YR 7/3) dry; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; many coarse and common fine irregular and common coarse tubular pores; slightly acid; clear smooth boundary.

C4—38 to 55 inches; grayish brown (2.5Y 5/2), stratified fine sandy loam (70 percent) and loamy fine sand (30 percent), light gray (2.5Y 7/2) dry; massive; soft, very friable, nonsticky and nonplastic; common fine irregular pores; slightly acid; clear smooth boundary.

C5—55 to 60 inches; grayish brown (10YR 5/2), stratified fine sandy loam (60 percent) and loamy fine sand (40 percent), light gray (10YR 7/2) dry; massive; soft, very friable, nonsticky and nonplastic; common fine irregular pores; slightly acid.

The content of clay in the control section ranges from 5 to 15 percent.

The A horizon has value of 3 or 4 when moist and 5 or 6 when dry and chroma of 2 or 3 when moist and dry. The C1 and C2 horizons have value of 4 to 6 when moist and 6 or 7 when dry. They are silt loam, fine sandy loam, or very fine sandy loam. The C3, C4, and C5 horizons have hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 or 3 when moist and dry. They are stratified very fine sandy loam to loamy sand.

Bellicum Series

The Bellicum series consists of deep, well drained soils formed in a mantle of pumice and volcanic ash over residuum and colluvium derived dominantly from porphyritic andesite. These soils are on mountain back slopes. Slopes are 8 to 65 percent. Elevation is 1,800 to 2,800 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 150 to 170 days.

These soils are cindery over medial-skeletal, frigid Typic Haplorthods.

Typical pedon of Bellicum very cindery loamy sand, 30 to 65 percent slopes, in Pierce County, about 5.5 miles south of Fairfax, 500 feet west and 1,500 feet north of the southeast corner of sec. 26, T. 17 N., R. 6 E.

Oi&Oa—1 inch to 0; fresh and partially decomposed needles, leaves, and twigs.

E—0 to 1 inch; dark grayish brown (10YR 4/2) cindery loamy sand, light brownish gray (10YR 6/2) dry; single grain; loose; many very fine and fine and common medium and coarse roots; many fine irregular pores; about 10 percent pumice and cinders 2 to 5 millimeters in diameter; strongly acid; abrupt wavy boundary.

Bs1—1 to 12 inches; variegated 70 percent strong brown (7.5YR 5/6) and 30 percent grayish brown (10YR 5/2) very cindery loamy sand, reddish yellow (7.5YR 6/6) and light brownish gray (10YR 6/2) dry; single grain; loose; many very fine and fine and common medium and coarse roots; many fine irregular pores; about 40 percent pumice and cinders 2 to 5 millimeters in diameter; strongly acid; clear wavy boundary.

Bs2—12 to 21 inches; variegated 80 percent yellowish red (5YR 5/6) and 20 percent grayish brown extremely cindery loamy sand, reddish yellow (7.5YR 6/6) and light brownish gray (10YR 6/2) dry; single grain; loose; common very fine and fine and few medium and coarse roots; many fine irregular pores; about 60 percent pumice and cinders 2 to 5 millimeters in diameter and 5 percent pebbles; moderately acid; abrupt wavy boundary.

2Bsb—21 to 39 inches; dark yellowish brown (10YR 3/4) very cobbly sandy loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few very fine, fine, and medium roots; many very fine irregular pores; about 40 percent cobbles and 15 percent pebbles; moderately acid; clear wavy boundary.

2C—39 to 52 inches; dark yellowish brown (10YR 4/4) extremely cobbly sandy loam, light yellowish brown (10YR 6/4) dry; massive; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine irregular pores; about 40 percent cobbles and 30 percent pebbles; moderately acid; clear wavy boundary.

3R—52 inches; fractured andesite.

The depth to bedrock is 40 to 60 inches. The thickness of the cindery material is 18 to 24 inches. The content of pumice and cinders averages 50 percent in the upper part of the particle-size control section and ranges from 60 to 75 percent in the lower part.

The E horizon has hue of 7.5YR or 10YR and value of 3 or 4 when moist and 6 or 7 when dry. The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 2 to 6 when moist and dry. The 2Bsb and 2C horizons have hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. The 2Bs horizon is very cobbly loam or very cobbly

sandy loam. The 2C horizon is very cobbly loam, very cobbly sandy loam, or extremely cobbly sandy loam.

Blethen Series

The Blethen series consists of very deep, well drained soils formed in colluvium and slope alluvium derived from glacial drift. The alluvium and colluvium have an admixture of volcanic ash. These soils are on mountain back slopes, side slopes, and toe slopes and on drift plain escarpments. Slopes are 5 to 65 percent. Elevation is 500 to 1,800 feet. The average annual precipitation is 55 to 75 inches, and the mean annual air temperature is about 47 degrees F. The frost-free period is 150 to 170 days.

These soils are loamy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Blethen gravelly loam, 30 to 65 percent slopes, in King County, about 4 miles west of Cedar Lake, 1,440 feet west and 400 feet north of the southeast corner of sec. 6, T. 22 N., R. 8 E.

Oi—5 to 2 inches; needles, leaves, and twigs.

Oa—2 inches to 0; decomposed forest litter; abrupt smooth boundary.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly loam, dark brown (10YR 4/3) dry; moderate very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many fine and medium roots; many very fine interstitial pores; about 25 percent subrounded pebbles; NaF pH 10.5; strongly acid; clear smooth boundary.

Bs1—5 to 13 inches; dark brown (10YR 4/3) very gravelly loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; common fine and medium roots; many very fine interstitial pores; about 40 percent subrounded pebbles; NaF pH 12.0+; moderately acid; clear smooth boundary.

Bs2—13 to 24 inches; dark brown (7.5YR 4/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine interstitial pores; about 40 percent subrounded pebbles and 5 percent cobbles; NaF pH 12.0+; moderately acid; gradual wavy boundary.

Bs3—24 to 42 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak very fine subangular blocky structure; soft; very friable, nonsticky and nonplastic; weakly smeary; few fine and medium roots; many very fine interstitial pores; about 60 percent subrounded pebbles and 10 percent cobbles; NaF pH 11.5; moderately acid; clear smooth boundary.

C—42 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly loamy sand, very pale brown (10YR 7/4) dry; loose, nonsticky and nonplastic; few fine roots; many very fine interstitial pores; about 65 percent subrounded pebbles and 15 percent cobbles; NaF pH 11.5; moderately acid.

The solum is 15 to 50 inches thick. The content of rock fragments in the control section is 35 to 70 percent by volume. Reaction is strongly acid to slightly acid throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist and 4 to 7 when dry, and chroma of 2 or 3 when moist and 2 to 4 when dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. Moist value and chroma of 3 do not occur together. This horizon is loam, silt loam, or sandy loam in the fine-earth fraction. It has 25 to 60 percent rock fragments in the upper part and 40 to 70 percent in the lower part.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 6 when moist and dry. The fine-earth fraction is sandy loam or loam within a depth of 40 inches and sandy loam, loam, or loamy sand below that depth. It has 40 to 70 percent pebbles, 5 to 25 percent cobbles, and 0 to 10 percent stones by volume.

Borohemists

Borohemists consist of very deep, very poorly drained soils formed in partially decomposed herbaceous plant material over decomposed woody material that has varying amounts of alluvium or mudflow deposits. They are in depressions on river terraces and mountains. Slopes are 0 to 2 percent. Elevation is 1,400 to 2,800 feet. The average annual precipitation is 60 to 90 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 150 to 170 days.

Typical pedon of Borohemists, 0 to 2 percent slopes, in Pierce County, about 5 miles west of Golden Lakes, in Mt. Rainier National Park, 700 feet east and 600 feet south of the northwest corner of sec. 12, T. 16 N., R. 6 E.

Oe1—0 to 4 inches; very dark brown (10YR 2/2) mucky peat, very dark grayish brown (10YR 3/2) dry;

moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; about 50 percent fiber before rubbing and 25 percent after rubbing; very strongly acid; abrupt smooth boundary.

Oe2—4 to 30 inches; very dark grayish brown (10YR 3/2) hemic material, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; many fine irregular pores; about 40 percent fiber before rubbing and 20 percent after rubbing; very strongly acid; abrupt smooth boundary.

C—30 to 34 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; many fine irregular pores; strongly acid; abrupt smooth boundary.

O'e—34 to 60 inches; dark reddish brown (5YR 3/3) hemic material, reddish brown (5YR 4/3) dry; moderate medium granular structure; slightly hard, friable, nonsticky and nonplastic; many fine irregular pores; about 80 percent fiber before rubbing and 45 percent after rubbing; very strongly acid.

The hemic material is 20 to more than 60 inches thick. The fiber in this material is derived mainly from grasses and sedges, but some pedons contain as much as 10 percent wood fragments. The content of fiber ranges from 50 to 80 percent before rubbing and from 20 to 50 percent after rubbing.

The Oe horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 or 3 when moist and 2 to 4 when dry, and chroma of 2 or 3 when moist and dry. The C horizon, if it occurs, has hue of 10YR, 2.5Y, or 5Y, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 1 or 2 when moist and dry. It is loam, silt loam, or sandy loam.

Bromo Series

The Bromo series consists of very deep, well drained soils formed in dacitic pumice and volcanic ash over residuum and colluvium derived dominantly from andesite. These soils are on mountain back slopes. Slopes are 30 to 65 percent. Elevation is 1,800 to 2,800 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 155 to 175 days.

These soils are cindery over medial, frigid Typic Haplorthods.

Typical pedon of Bromo very cindery sandy loam, 30 to 65 percent slopes, in Pierce County, about 2.5 miles west of Nisqually Park Ranger Station, 1,800 feet north and 900 feet west of the southeast corner of sec. 30, T. 15 N., R. 7 E.

Oi—2 inches to 0; undecomposed needles, twigs, and leaves.

A—0 to 4 inches; very dark brown (10YR 2/2) very cindery sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine irregular pores; about 40 percent pumice 2 to 5 millimeters in diameter; moderately acid; clear smooth boundary.

AB—4 to 13 inches; about 80 percent dark brown (10YR 3/3) and 20 percent light brownish gray (10YR 6/2) very cindery loamy sand, 80 percent brown (10YR 5/3) and 20 percent light gray (10YR 7/2) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 40 percent pumice 2 to 5 millimeters in diameter; moderately acid; clear wavy boundary.

Bs1—13 to 23 inches; about 50 percent yellowish red (5YR 5/6), 30 percent strong brown (7.5YR 5/8), and 20 percent light brownish gray (10YR 6/2) very cindery sand, 80 percent reddish yellow (7.5YR 6/6) and 20 percent light gray (10YR 7/2) dry; single grain; loose; common very fine, fine, and medium roots; many very fine irregular pores; about 40 percent pumice 2 to 5 millimeters in diameter; thin layers of dark brown (10YR 3/3) material 0.25 to 1 inch thick; moderately acid; clear wavy boundary.

Bs2—23 to 29 inches; about 80 percent reddish yellow (7.5YR 6/8) and 20 percent light brownish gray (10YR 6/2) very cindery sand, 80 percent yellow (10YR 7/6) and 20 percent light gray (10YR 7/2) dry; single grain; loose; common very fine and fine roots; many very fine irregular pores; about 50 percent pumice 2 to 5 millimeters in diameter; thin layers of dark brown (10YR 3/3) material 0.25 to 1 inch thick; moderately acid; abrupt smooth boundary.

Bs3—29 to 32 inches; about 50 percent reddish yellow (7.5YR 6/8) and 50 percent light gray (10YR 7/2) very cindery sand, 50 percent yellow (10YR 8/6) and 50 percent very pale brown (10YR 8/4) dry; single grain; loose; few very fine roots; many very fine irregular pores; about 50 percent pumice 2 to 5 millimeters in diameter; slightly acid; abrupt wavy boundary.

2CBb—32 to 55 inches; dark brown (7.5YR 4/4) sandy loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary;

few very fine roots; common very fine irregular pores; about 5 percent pebbles; slightly acid; clear smooth boundary.

2Cb—55 to 60 inches; dark brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; massive; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine irregular pores; about 5 percent pebbles; slightly acid.

Depth to the buried part of the profile is 20 to 35 inches.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry. The AB horizon has hue of 7.5YR or 10YR and chroma of dominantly 2 or 3 when moist and dry. It is very cindery sandy loam or very cindery loamy sand. The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 7 when moist and 6 to 8 when dry, and chroma of 2 to 8 when moist and dry. The 2CB and 2C horizons have hue of 7.5YR or 10YR and chroma of 3 or 4 when moist and dry. They are loam or sandy loam.

Cattcreek Series

The Cattcreek series consists of very deep, well drained soils formed in dacitic pumice and volcanic ash over residuum and colluvium derived dominantly from andesite. In some areas these soils are underlain by glacial till or sandstone. They are on mountain back slopes and in cirque basins. Slopes are 8 to 90 percent. Elevation is 2,800 to 5,300 feet. The average annual precipitation is 95 to 115 inches, and the mean annual air temperature is about 39 degrees F. The frost-free period is 110 to 120 days.

These soils are cindery over medial-skeletal Typic Cryorthods.

Typical pedon of Cattcreek very cindery loamy sand, 30 to 65 percent slopes, in Pierce County, about 1.5 miles northwest of Nisqually Park Ranger Station, 1,600 feet west and 530 feet south of the northeast corner of sec. 29, T. 15 N., R. 7 E.

Oi—3 to 2 inches; undecomposed leaf litter.

Oa—2 inches to 0; black (10YR 2/1), decomposed leaf litter.

E—0 to 3 inches; dark brown (7.5YR 3/2) cindery loamy sand, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; loose, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; many fine irregular pores; few pebbles; moderately acid; abrupt wavy boundary.

Bs1—3 to 7 inches; dark brown (7.5YR 3/4) very cindery loamy sand, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; loose, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many fine irregular pores; few pebbles; moderately acid; clear smooth boundary.

Bs2—7 to 11 inches; strong brown (7.5YR 4/6) very cindery loamy sand, strong brown (7.5YR 5/6) dry; weak fine subangular blocky structure; loose, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many fine irregular pores; few pebbles; moderately acid; clear smooth boundary.

Bs3—11 to 21 inches; variegated strong brown (7.5YR 4/6) and pinkish gray (7.5YR 7/2) very cindery sand, strong brown (7.5YR 5/6) and pinkish white (7.5YR 8/2) dry; single grain; loose; common very fine and fine and few coarse roots; many fine irregular pores; few pebbles; slightly acid; abrupt wavy boundary.

2Bsb1—21 to 25 inches; dark yellowish brown (10YR 4/6) very gravelly sandy loam, yellowish brown (10YR 5/6) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 35 percent pebbles; slightly acid; gradual smooth boundary.

2Bsb2—25 to 60 inches; olive brown (2.5Y 4/4) very gravelly sandy loam, light olive brown (2.5Y 5/4) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; common very fine irregular pores; about 45 percent pebbles; slightly acid.

The thickness of the cindery material is 15 to 30 inches. The content of rock fragments ranges from 0 to 10 percent in the upper part of the particle-size control section and from 35 to 55 percent in the lower part.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6 when moist and 5 or 6 when dry, and chroma of 1 or 2 when moist and dry.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 5 to 8 when dry, and chroma of 2 to 6 when moist and dry. It is very cindery loamy sand or very cindery sand.

The 2Bsb horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 6 when moist and dry. It is very gravelly sandy loam, very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loam, or extremely gravelly silt loam.

Cayuse Series

The Cayuse series consists of very deep, well drained soils formed in volcanic ash and pumice over

residuum and colluvium derived from andesite or basalt. These soils are on mountain ridge crests and side slopes. Slopes are 8 to 90 percent. Elevation is 5,000 to 6,200 feet. The average annual precipitation is 80 to 100 inches, and the mean annual air temperature is about 38 degrees F. The frost-free period is 85 to 105 days.

These soils are ashy over medial Typic Cryandepts.

Typical pedon of Cayuse sandy loam, 8 to 30 percent slopes, in Pierce County, Corral Pass Campground, Snoqualmie National Forest, 2,340 feet east and 790 feet north of the southwest corner of sec. 30, T. 18 N., R. 11 E.

Oi—0.25 inch to 0; moss, twigs, needles.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) sandy loam (volcanic ash), dark brown (10YR 4/3) dry; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and common fine roots; very strongly acid; NaF pH 12.0+; clear smooth boundary.

A2—4 to 13 inches; dark brown (10YR 3/3) sandy loam (volcanic ash), dark yellowish brown (10YR 4/4) dry; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; many very fine, fine, and medium roots; about 10 percent fine pebbles; very strongly acid; NaF pH 12.0+; clear smooth boundary.

Bw1—13 to 30 inches; brown (7.5YR 4/4) loam (volcanic ash), brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; moderately smeary; common fine and medium roots; about 10 percent pebbles; strongly acid; NaF pH 11.5; clear smooth boundary.

2Bw2—30 to 36 inches; dark yellowish brown (10YR 4/6) gravelly loam, brownish yellow (10YR 6/6) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; few fine roots; about 30 percent hard pebbles and 10 percent soft pebbles; strongly acid; NaF pH 11.0; clear smooth boundary.

2C—36 to 60 inches; variegated dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) very gravelly loam, light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) dry; moderate fine and medium angular and subangular blocky structure; hard, firm, slightly sticky and slightly plastic; moderately smeary; few fine roots; about 40 percent hard pebbles and 10 percent soft pebbles; strongly acid; NaF pH 10.5.

The mantle of volcanic ash is 14 to 35 inches thick. Reaction is moderately acid to very strongly acid throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 4 to 6 when moist and dry. It is loam or sandy loam. It has 5 to 15 percent rock fragments by volume.

The 2Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is gravelly loam or gravelly sandy loam. It has 15 to 35 percent hard rock fragments by volume.

The 2C horizon has value of 4 or 5 when moist and 5 or 6 when dry and chroma of 4 to 6 when moist and dry. It is very gravelly loam, gravelly loam, or very gravelly sandy loam. It has 30 to 50 percent hard rock fragments by volume.

Chinkmin Series

The Chinkmin series consists of moderately well drained soils formed in a thin mantle of volcanic ash and pumice over colluvium derived from dense glacial till. These soils are moderately deep to ortstein. They are in cirques and valleys and on lateral moraines and drift plains in the mountains. Slopes are 0 to 70 percent. Elevation is 2,500 to 6,000 feet. The average annual precipitation is 90 to 100 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 80 to 100 days.

These soils are loamy-skeletal, mixed, ortstein Typic Cryohumods.

Typical pedon of Chinkmin sandy loam, 0 to 15 percent slopes, in King County, about 20 feet east of Forest Service Road 2291, in the Hansen Creek drainage, 2,500 feet south and 1,200 feet west of the northeast corner of sec. 28, T. 22 N., R. 10 E.

Oi—3 to 2 inches; loose forest litter, including needles, twigs, bark, and moss.

Oa—2 inches to 0; black (10YR 2/1), highly decomposed organic material that is matted and bound by roots; abrupt smooth boundary.

E—0 to 3 inches; gray (10YR 6/1) loamy sand (volcanic ash and pumice), light gray (10YR 7/1) dry; single grain; loose; common very fine, fine, medium, and coarse roots; many very fine and fine interstitial pores; very strongly acid; abrupt wavy boundary.

Bhs1—3 to 8 inches; dark reddish brown (2.5YR 3/4) and yellowish red (5YR 4/6) sandy loam, dark reddish brown (5YR 3/3) dry; moderate medium subangular blocky structure; hard, firm, slightly

sticky and slightly plastic; moderately smeary; common very fine, fine, medium, and coarse roots; many very fine and fine interstitial pores; about 10 percent pebbles and shotlike aggregate; very strongly acid; clear irregular boundary.

Bhs2—8 to 15 inches; variegated strong brown (7.5YR 4/6) and reddish brown (5YR 4/4) gravelly loam, strong brown (7.5YR 5/8) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and fine interstitial pores; about 20 percent pebbles and 10 percent cobbles; strongly acid; clear smooth boundary.

Bs—15 to 22 inches; brown (7.5YR 4/4) very cobbly loam, yellowish brown (10YR 5/8) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and fine roots; many interstitial pores; about 20 percent pebbles and 30 percent cobbles; strongly acid; clear smooth boundary.

BC—22 to 32 inches; dark yellowish brown (10YR 3/4) very gravelly sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; few very fine and fine roots; many interstitial pores; about 35 percent pebbles and 10 percent cobbles; strongly acid; abrupt smooth boundary.

2Bsm—32 to 60 inches; dark grayish brown (2.5Y 4/2) ortstein that breaks to extremely gravelly sandy loam, light gray (2.5Y 7/2) dry; common fine prominent reddish brown (5YR 4/4) stains or mottles; massive; very hard, extremely firm, nonsticky and nonplastic; about 45 percent subangular pebbles and 20 percent subangular cobbles; strongly acid.

The depth to ortstein ranges from 20 to 40 inches.

The E horizon has hue of 7.5YR or 10YR when moist and dry, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs1 horizon has hue of 2.5YR, 5YR, or 7.5YR when moist and dry, value of 2 to 4 when moist, and chroma of 4 to 6 when moist and 2 to 6 when dry. Reaction is very strongly acid to moderately acid.

The Bhs2 horizon has hue of 5YR or 7.5YR when moist and 7.5YR or 10YR when dry, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and 4 to 8 when dry. The content of rock fragments is 15 to 40 percent by volume. This horizon is gravelly loam, cobbly loam, very gravelly loam, gravelly silt loam, or gravelly fine sandy loam. Reaction is very strongly acid to moderately acid.

The Bs horizon has hue of 7.5YR or 10YR when moist and dry, value of 5 or 6 when dry, and chroma of 4 to 6 when moist and 4 to 8 when dry. The content of rock fragments is 35 to 60 percent by volume. These fragments include both gravel and cobbles. This horizon is very gravelly sandy loam, very cobbly sandy loam, very gravelly loam, very cobbly loam, or very cobbly fine sandy loam. Reaction is very strongly acid or strongly acid.

The BC horizon has hue of 5YR, 10YR, or 2.5Y, value of 3 or 4 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is very gravelly loam, very cobbly loam, very gravelly sandy loam, or very cobbly sandy loam. Reaction is very strongly acid or strongly acid.

The 2Bsm horizon has value of 4 or 5 when moist and 6 or 7 when dry and chroma of 2 to 6 when moist and dry. It is ortstein that formed in dense glacial till. It breaks to very gravelly loam, extremely gravelly loam, extremely gravelly sandy loam, or very cobbly sandy loam. The content of rock fragments is 40 to 75 percent.

Christoff Series

The Christoff series consists of very deep, moderately well drained soils formed in volcanic ash and cinders over highly weathered breccia and tuffaceous rocks. These soils are on mountain side slopes and in slump areas. Slopes are 6 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are fine-loamy, mixed Eutric Glossoboralfs.

Typical pedon of Christoff sandy loam, 30 to 65 percent slopes, in King County, about 0.5 mile north of Greenwater, 1,400 feet north and 2,000 feet west of the southeast corner of sec. 3, T. 19 N., R. 9 E.

Oi—1 to 0.5 inch; leaves, needles, and twigs; abrupt smooth boundary.

Oa—0.5 inch to 0; decomposed organic litter; abrupt smooth boundary.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) sandy loam (volcanic ash), brown (10YR 5/3) dry; single grain; loose; many very fine and fine and common medium roots; about 2 percent pebbles and 3 percent hard cinders; strongly acid; clear smooth boundary.

E1—3 to 12 inches; brown (10YR 4/3) sandy loam (volcanic ash), very pale brown (10YR 7/3) dry; weak fine subangular blocky structure; soft, very

friable, slightly sticky and slightly plastic; moderately smeary; many very fine and fine and common medium and coarse roots; about 5 percent pebbles and 5 percent hard cinders; moderately acid; clear smooth boundary.

2E2—12 to 26 inches; dark yellowish brown (10YR 4/4) loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; common very fine, fine, medium, and coarse roots; about 10 percent pebbles; moderately acid; clear wavy boundary.

2Bt1—26 to 42 inches; dark yellowish brown (10YR 4/4) loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; weakly smeary; few very fine and fine roots; about 5 percent pebbles; moderately acid; gradual smooth boundary.

2Bt2—42 to 60 inches; brown (10YR 4/3) clay loam, pale brown (10YR 6/3) dry; weak coarse subangular blocky structure; hard, friable, sticky and plastic; about 10 percent pebbles; common thin clay films in pores and on faces of peds; moderately acid.

The A horizon has value of 3 or 4 when moist and chroma of 2 to 4 when moist and dry. Reaction is strongly acid or moderately acid.

The E horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 7 or 8 when dry, and chroma of 3 or 4 when moist and dry. It is sandy loam, gravelly sandy loam, loam, or gravelly loam. It has more than 60 percent volcanic ash and cinders. It has 5 to 10 percent hard cinders and 5 to 20 percent pebbles.

The 2E horizon has value of 4 or 5 when moist and 7 or 8 when dry and chroma of 3 or 4 when moist. It has 5 to 15 percent pebbles.

The 2Bt horizon has value of 4 or 5 when moist and chroma of 3 to 6 when moist and dry. It is loam or clay loam. It has 5 to 15 percent pebbles. It is highly weathered breccia exhibiting rock structure. The weathered pebbles cause a mottled appearance. Some pedons have mottles with hue of 7.5YR or 10YR and chroma of 1 to 3 when moist.

Chuckanut Series

The Chuckanut series consists of deep, well drained soils formed in a mixture of volcanic ash and colluvium derived from sandstone and glacial till. These soils are on back slopes and toe slopes in the foothills. Slopes are 6 to 65 percent. Elevation is 400 to 1,500 feet. The average annual precipitation is 35 to 45 inches, and the mean annual air temperature is about 49 degrees F. The frost-free period is 170 to 190 days.

These soils are coarse-loamy, mixed, mesic Typic Haplorthods.

Typical pedon of Chuckanut loam, 30 to 65 percent slopes, in King County, about 1 mile southwest of Ravensdale, 3,600 feet west and 1,500 feet north of the southeast corner of sec. 36, T. 22 N., R. 6 E.

Oa—1 inch to 0; undecomposed leaves, needles, and twigs.

A—0 to 8 inches; dark brown (10YR 3/3) loam, grayish brown (10YR 5/2) dry; strong fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and few medium roots; many fine irregular pores; about 10 percent pebbles; strongly acid; clear wavy boundary.

Bs1—8 to 17 inches; dark yellowish brown (10YR 4/4) gravelly loam, light yellowish brown (10YR 6/4) dry; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and few medium and coarse roots; many very fine and fine irregular pores; about 25 percent pebbles; strongly acid; clear smooth boundary.

Bs2—17 to 24 inches; pale brown (10YR 6/3) gravelly sandy loam, very pale brown (10YR 7/3) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; common fine roots; many very fine irregular pores; about 15 percent pebbles; strongly acid; clear smooth boundary.

Bs3—24 to 35 inches; dark brown (7.5YR 4/4) gravelly loam, light yellowish brown (10YR 6/4) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine and fine irregular and few fine tubular pores; about 20 percent pebbles; strongly acid; clear wavy boundary.

BC—35 to 45 inches; light brownish gray (2.5Y 6/2) gravelly loam, very pale brown (10YR 8/3) dry; moderate medium subangular blocky structure; very hard, friable, sticky and plastic; weakly smeary; few fine roots; many very fine and fine irregular and common very fine and fine tubular pores; about 30 percent pebbles; few thin clay films on faces of peds; strongly acid; clear irregular boundary.

2C—45 to 50 inches; light gray (2.5Y 7/2) gravelly loam, white (2.5Y 8/2) dry; massive; very hard, firm, sticky and plastic; about 15 percent pebbles; strongly acid; gradual smooth boundary.

2Cr—50 inches; weathered sandstone.

The thickness of the solum is 15 to 40 inches. The

depth to bedrock is 40 to 60 inches. The overall content of rock fragments in the control section ranges from 15 to 30 percent, although individual horizons may contain 35 to 40 percent pebbles.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 5 to 7 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam or gravelly sandy loam.

The BC and C horizons have hue of 10YR or 2.5Y, value of 6 or 7 when moist and 7 or 8 when dry, and chroma of 2 to 4 when moist and dry. They are gravelly loam or gravelly sandy loam.

Cinebar Series

The Cinebar series consists of very deep, well drained soils formed in loess and slope alluvium high in content of volcanic ash. These soils are on back slopes and toe slopes in the foothills. Slopes are 6 to 65 percent. Elevation is 500 to 1,800 feet. The average annual precipitation is 50 to 75 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 165 to 185 days.

These soils are medial, mesic Typic Dystrandepts.

Typical pedon of Cinebar silt loam, 6 to 15 percent slopes, in Pierce County, southeast of Weyerhaeuser Road E. 810, about 1,400 feet south and 2,700 feet west of the northeast corner of sec. 20, T. 16 N., R. 5 E.

Oi—2 inches to 0; decomposed needles, twigs, leaves, and moss.

A—0 to 10 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; strong very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

AB—10 to 18 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; strong very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium and few coarse roots; many very fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

Bw1—18 to 36 inches; yellowish brown (10YR 5/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium and coarse roots; many very fine tubular pores; about 5 percent pebbles; moderately acid; gradual smooth boundary.

Bw2—36 to 54 inches; yellowish brown (10YR 5/6) silt loam, brownish yellow (10YR 6/6) dry; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common very fine tubular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

C—54 to 60 inches; yellowish brown (10YR 5/4) loam, very pale brown (10YR 7/4) dry; massive; hard, firm, slightly sticky and slightly plastic; weakly smeary; common very fine tubular pores; about 10 percent pebbles; moderately acid.

The thickness of the solum is more than 50 inches. The overall content of rock fragments in the control section ranges from 5 to 15 percent, although individual horizons may contain 15 to 25 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry. The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. The C horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 to 6 when moist and dry. It is loam or silt loam.

Cotteral Series

The Cotteral series consists of very deep, well drained soils formed in volcanic ash and cinders. These soils are on mountain back slopes. Slopes are 8 to 65 percent. Elevation is 2,800 to 4,900 feet. The average annual precipitation is 90 to 110 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 115 to 135 days.

These soils are cindery over medial Typic Cryorthods.

Typical pedon of Cotteral very cindery sandy loam, 8 to 30 percent slopes, in Pierce County, along Forest Service Road 159 about 1 mile west of Mt. Beljica, 1,500 feet south and 1,300 feet east of the northwest corner of sec. 20, T. 15 N., R. 7 E.

Oi—3 inches to 0; undecomposed twigs, moss, needles, and rotted wood.

E—0 to 2 inches; dark grayish brown (10YR 4/2) cindery sandy loam, pinkish gray (7.5YR 6/2) dry; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine,

and medium and few coarse roots; many very fine irregular pores; about 30 percent pumice 2 to 5 millimeters in diameter; very strongly acid; abrupt wavy boundary.

Bs1—2 to 9 inches; reddish brown (5YR 4/4) very cindery sandy loam, strong brown (7.5YR 5/6) dry; weak medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium and coarse roots; many very fine irregular pores; about 40 percent pumice 2 to 5 millimeters in diameter; strongly acid; clear wavy boundary.

Bs2—9 to 19 inches; dark brown (7.5YR 4/4) very cindery sand, reddish yellow (7.5YR 6/6) dry; single grain; loose; common very fine and fine and few medium roots; many very fine irregular pores; about 50 percent pumice 2 to 5 millimeters in diameter; moderately acid; clear wavy boundary.

Bs3—19 to 32 inches; strong brown (7.5YR 5/8) very cindery sand, reddish yellow (7.5YR 7/8) dry; single grain; loose; few very fine and fine roots; many very fine irregular pores; about 50 percent pumice 2 to 5 millimeters in diameter; moderately acid; abrupt wavy boundary.

2Bs4—32 to 60 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common very fine irregular and tubular pores; about 10 percent pebbles; moderately acid.

Depth to the 2B horizon is 14 to 36 inches. The content of pumice in the upper part of the control section ranges from 40 to 60 percent.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 4 to 8 when moist and dry. It is very cindery sand or very cindery loamy sand.

The 2Bs horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It is silt loam, loam, or sandy loam.

Crinker Series

The Crinker series consists of well drained soils formed in a mixture of glacial till, volcanic ash, and colluvium and slope alluvium derived from phyllite. These soils are moderately deep to weathered bedrock. They are on mountain back slopes and shoulder slopes. Slopes are 30 to 65 percent. Elevation is 2,600 to 3,600 feet. The average annual precipitation is 80 to 95 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 90 to 110 days.

These soils are loamy-skeletal, mixed Typic Cryorthods.

Typical pedon of Crinker very channery loam, 30 to 65 percent slopes, in King County, about 3 miles northeast of Skykomish, 2,000 feet north and 200 feet west of the southeast corner of sec. 21, T. 26 N., R. 12 E.

Oi—5 to 4 inches; undecomposed needles, leaves, and twigs.

Oa—4 inches to 0; decomposed organic mat.

E—0 to 2 inches; dark grayish brown (10YR 4/2) channery sandy loam, gray (10YR 6/1) and light brownish gray (10YR 6/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 15 percent channers and 5 percent pebbles; very strongly acid; abrupt smooth boundary.

Bhs—2 to 5 inches; dark brown (7.5YR 4/4) very channery loam, yellowish brown (10YR 5/4) dry; dark reddish brown (5YR 3/3) organic stains, brown (7.5YR 5/4) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine irregular pores; about 40 percent channers and 20 percent pebbles; strongly acid; clear wavy boundary.

Bs—5 to 14 inches; dark yellowish brown (10YR 3/4) extremely channery loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and common medium roots; many very fine irregular pores; about 40 percent channers and 30 percent pebbles; strongly acid; clear wavy boundary.

BC—14 to 22 inches; dark yellowish brown (10YR 4/4) extremely channery loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 40 percent channers, 30 percent pebbles, and 5 percent cobbles; very strongly acid; clear wavy boundary.

2C—22 to 32 inches; dark grayish brown (2.5Y 4/2) extremely channery loam, light brownish gray (2.5Y 6/2) dry; massive; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; many very fine irregular pores; about 70 percent

channers and 5 percent cobbles; very strongly acid; gradual wavy boundary.
2R—32 inches; weathered phyllite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the control section ranges from 40 to 70 percent.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is very channery or extremely channery loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is extremely channery or very channery loam.

Cryofluvents

Cryofluvents consist of deep and very deep, well drained soils formed in alluvium over andesite. They are in mountain valleys. Slopes are 0 to 8 percent. Elevation is 2,800 to 3,500 feet. The average annual precipitation is 80 to 100 inches, and the mean annual air temperature is about 38 degrees F. The frost-free period is 90 to 110 days.

Typical pedon of Cryofluvents, 0 to 8 percent slopes, in Pierce County, about 2 miles north of Old Baldy Mountain on Forest Service Road 1819, about 1,200 feet east and 2,100 feet north of the southwest corner of sec. 14, T. 18 N., R. 7 E.

Oi—4 to 2 inches; undecomposed needles, leaves, and twigs.
Oa—2 inches to 0; decomposed needles, leaves, and twigs.
A—0 to 5 inches; dark brown (10YR 3/3) stony sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine roots; many very fine irregular pores; about 10 percent pebbles; very strongly acid; abrupt wavy boundary.
Bw—5 to 9 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand, light yellowish brown (10YR 6/4) dry; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and few medium roots; many fine irregular pores; about 15 percent pebbles; very strongly acid; clear smooth boundary.
C1—9 to 21 inches; dark yellowish brown (10YR 4/6) gravelly loamy sand, light yellowish brown (10YR 6/4) dry; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; about 30 percent pebbles; strongly acid; clear smooth boundary.
C2—21 to 28 inches; dark brown (10YR 4/3) very gravelly loamy sand, pale brown (10YR 6/3) dry; single grain; loose, nonsticky and nonplastic; few fine roots; many fine irregular pores; about 35 percent pebbles and 10 percent cobbles; strongly acid; abrupt wavy boundary.
C3—28 to 49 inches; light olive brown (2.5Y 5/4) very gravelly fine sand, pale yellow (2.5Y 7/4) dry; single grain; loose, nonsticky and nonplastic; many fine irregular pores; about 45 percent pebbles and 10 percent cobbles; strongly acid; abrupt smooth boundary.
2R—49 inches; fractured andesite.

The depth to bedrock is 40 to 80 inches. The content of rock fragments in the particle-size control section ranges from 25 to 45 percent. The subsoil and substratum either are sandy or are sandy and are stratified with grayish, low-chroma, silty material.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loamy sand, very gravelly sandy loam, or cobbly loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is stratified sandy loam to extremely gravelly loamy sand.

Cryohemists

Cryohemists consist of very deep, very poorly drained soils formed in a mixture of peat, muck, pumice, volcanic ash, and glacial till. They are in depressions in mountain valleys and in cirques on mountains. Slopes are 0 to 2 percent. Elevation is 2,800 to 3,500 feet. The average annual precipitation is 90 to 120 inches, and the mean annual air temperature is about 41 degrees F. The frost-free period is 100 to 120 days.

Typical pedon of Cryohemists, 0 to 2 percent slopes, in Pierce County, about 6 miles northeast of Ashford, 1,100 feet west and 1,200 feet south of the northeast corner of sec. 25, T. 16 N., R. 6 E.

Oa—0 to 6 inches; black (10YR 2/1) muck, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine irregular pores; about 50 percent fiber before rubbing and 10 percent after rubbing; very strongly acid; clear smooth boundary.

Oe1—6 to 21 inches; very dark grayish brown (10YR 3/2) hemic material, dark grayish brown (10YR 4/2) dry; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many fine irregular pores; about 45 percent fiber before rubbing and 20 percent after rubbing; very strongly acid; clear wavy boundary.

Oe2—21 to 28 inches; dark brown (10YR 3/3) hemic material, reddish brown (5YR 4/3) dry; weak thin platy structure; slightly hard, friable, nonsticky and nonplastic; many fine irregular pores; about 45 percent fiber before rubbing and 20 percent after rubbing; slightly acid; abrupt smooth boundary.

2C—28 to 60 inches; gray (N 5/0) clay loam, light gray (N 6/0) dry; massive; hard, firm, slightly sticky and plastic; many fine irregular pores; slightly acid.

The organic material is 20 to more than 60 inches thick. The fiber in this material is derived mainly from grasses and sedges, but some pedons contain as much as 10 percent wood fragments. The content of fiber ranges from 40 to 70 percent before rubbing and from 20 to 40 percent after rubbing.

The Oa horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 2 to 4 when dry, and chroma of 1 to 3 when moist and dry. The Oe horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 2 to 4 when dry, and chroma of 2 or 3 when moist and dry. The 2C horizon, if it occurs, has hue of 2.5Y or is neutral in hue. It has value of 3 to 5 when moist and 5 to 7 when dry and chroma of 0 to 2 when moist and dry. It is clay loam or gravelly loam.

Dobbs Series

The Dobbs series consists of moderately well drained soils formed in volcanic ash, colluvium, and dense glacial till. These soils are moderately deep to dense glacial till. They are in cirque basins and on the adjacent mountain slopes. Slopes are 8 to 30 percent. Elevation is 2,000 to 3,200 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 160 to 180 days.

These soils are medial-skeletal, frigid Andic Haplumbrepts.

Typical pedon of Dobbs loam, 8 to 30 percent slopes, in Pierce County, about 2 miles west of the junction of the Mowich and Puyallup Rivers, 2,400 feet north and 1,700 feet east of the southwest corner of sec. 5, T. 16 N., R. 6 E.

Oi—3 to 2 inches; undecomposed needles, leaves, and twigs.

Oa—2 inches to 0; well decomposed organic mat.

A—0 to 10 inches; dark brown (10YR 3/3) loam, dark brown (10YR 4/3) dry; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine, common medium, and few coarse roots; many very fine irregular pores; about 10 percent pebbles; slightly acid; abrupt wavy boundary.

Bw1—10 to 21 inches; dark brown (7.5YR 4/4) very gravelly loam, brown (7.5YR 5/4) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 25 percent pebbles and 10 percent cobbles; slightly acid; clear wavy boundary.

Bw2—21 to 28 inches; dark yellowish brown (10YR 4/4) very gravelly loam, yellowish brown (10YR 5/6) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; many very fine irregular pores; about 25 percent pebbles and 10 percent cobbles; slightly acid; clear wavy boundary.

Bw3—28 to 35 inches; yellowish brown (10YR 5/4) very gravelly loam, very pale brown (10YR 7/4) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; many very fine irregular pores; about 35 percent pebbles and 10 percent cobbles; slightly acid; abrupt smooth boundary.

2Cd—35 to 60 inches; dark yellowish brown (10YR 4/4), dense glacial till that breaks to very gravelly sandy loam, very pale brown (10YR 7/4) dry; massive; hard, very firm, nonsticky and slightly plastic; about 45 percent pebbles and 10 percent cobbles; slightly acid.

The depth to dense glacial till is 30 to 40 inches. The content of rock fragments in the control section ranges from 35 to 50 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 3 or 4 when dry.

The Bw horizon has hue of 7.5YR or 10YR, value of

4 or 5 when moist and 5 to 7 when dry, and chroma of 4 to 6 when moist and dry. It is very gravelly loam or very gravelly silt loam.

Some pedons have a C horizon. The 2Cd horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 6 when moist and dry. It is dense glacial till that breaks to very gravelly loam or very gravelly sandy loam.

Edgewick Series

The Edgewick series consists of very deep, well drained soils formed in alluvium. These soils are on river terraces. Slopes are 0 to 3 percent. Elevation is 50 to 500 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 140 to 160 days.

These soils are coarse-loamy, mixed, mesic Fluventic Haplumbrepts.

Typical pedon of Edgewick silt loam, 0 to 3 percent slopes, in King County, in the town of North Bend, 2,500 feet north and 1,000 feet east of the southwest corner of sec. 10, T. 23 N., R. 8 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; strongly acid; clear smooth boundary.

Bw1—8 to 10 inches; olive brown (2.5Y 4/4) silt loam, light gray (2.5Y 7/2) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; moderately acid; clear wavy boundary.

Bw2—10 to 20 inches; olive brown (2.5Y 4/4) silt loam, light gray (2.5Y 7/2) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; moderately acid; clear wavy boundary.

C1—20 to 33 inches; olive brown (2.5Y 4/4) fine sandy loam, pale yellow (2.5Y 7/4) dry; massive; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine irregular pores; about 10 percent pebbles; moderately acid; gradual wavy boundary.

C2—33 to 46 inches; olive brown (2.5Y 4/4) loamy sand, light gray (2.5Y 7/2) dry; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; about 10 percent pebbles; moderately acid; clear wavy boundary.

2C3—46 to 60 inches; dark grayish brown (2.5Y 4/2) very gravelly sand, light brownish gray (2.5Y 6/2) dry; single grain; loose; many very fine irregular pores; about 50 percent pebbles; neutral.

Depth to the 2C horizon is 40 to more than 60 inches. The umbric epipedon is 7 to 10 inches thick.

The Ap horizon has hue of 10YR or 2.5Y and value of 2 or 3 when moist and 4 or 5 when dry. Reaction is very strongly acid to moderately acid.

The Bw horizon has hue of 10YR or 2.5Y, value of 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is silt loam, loam, or fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is fine sandy loam in the upper part and grades to loamy sand in the lower part.

The 2C horizon has hue of 2.5Y or 5Y, value of 2 to 4 when moist and 5 or 6 when dry, and chroma of 1 or 2 when moist and dry. Reaction is slightly acid or neutral.

Elwell Series

The Elwell series consists of moderately well drained soils formed in glacial till that has an admixture of volcanic ash and loess. These soils are moderately deep to ortstein. They are on glacially modified mountain back slopes and plateaus. Slopes are 6 to 65 percent. Elevation is 400 to 2,500 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 130 to 150 days.

These soils are coarse-loamy, mixed, frigid, ortstein Typic Haplorthods.

Typical pedon of Elwell silt loam, 6 to 30 percent slopes, in King County, about 2.5 miles northeast of Walsh Lake, 1,800 feet south and 2,600 feet east of the northwest corner of sec. 34, T. 23 N., R. 7 E.

Oa&Oi—3 inches to 0; fresh and decomposed needles, leaves, and twigs.

A—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 10 percent pebbles; strongly acid; gradual smooth boundary.

Bs1—8 to 16 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly

plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 10 percent pebbles; strongly acid; abrupt smooth boundary.

Bs2—16 to 26 inches; dark brown (10YR 4/3) gravelly silt loam, pale brown (10YR 6/3) dry; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 15 percent pebbles; strongly acid; clear wavy boundary.

Bs3—26 to 35 inches; yellowish brown (10YR 5/4) gravelly silt loam, very pale brown (10YR 7/4) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; many very fine irregular pores; about 30 percent pebbles; strongly acid; clear wavy boundary.

Bsm—35 to 60 inches; grayish brown (2.5Y 5/2) ortstein that breaks to gravelly silt loam, light gray (2.5Y 7/2) dry; massive in place but parting to strong thick plates when removed; hard, firm, slightly sticky and slightly plastic; about 25 percent pebbles; strongly acid.

The depth to ortstein ranges from 20 to 40 inches. The overall content of rock fragments in the control section ranges from 15 to 35 percent, although individual horizons may contain 35 to 45 percent pebbles.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry. The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. It is silt loam, gravelly loam, or gravelly silt loam. The Bsm horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is ortstein that breaks to gravelly silt loam, gravelly loam, gravelly sandy loam, or very gravelly sandy loam.

Ethania Series

The Ethania series consists of very deep, well drained soils formed in dacitic pumice and volcanic ash over residuum and colluvium derived from sandstone, andesite, or glacial till. These soils are on mountain ridge crests and back slopes and in cirque basins. Slopes are 8 to 90 percent. Elevation is 3,500 to 5,200 feet. The average annual precipitation is 80 to 110 inches, and the mean annual air temperature is about 37 degrees F. The frost-free period is 90 to 110 days.

These soils are cindery over medial-skeletal Typic Cryohumods.

Typical pedon of Ethania very cindery loamy sand, sandstone substratum, 30 to 65 percent slopes, in Pierce County, St. Regis Kapowsin Tree Farm, south of St. Regis Road 3210, about 1,950 feet east and 1,250 feet south of the northwest corner of sec. 26, T. 16 N., R. 6 E.

Oe—1 inch to 0; slightly decomposed needles, twigs and bark.

E—0 to 2 inches; brown (7.5YR 4/2) very cindery loamy sand, brown (7.5YR 5/2) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine, fine, medium, and coarse roots; about 35 percent by volume pumice 2 to 10 millimeters in diameter; very strongly acid; NaF pH less than 9.2; abrupt smooth boundary.

Bhs—2 to 3 inches; dark reddish brown (5YR 3/2) very cindery loamy sand, reddish brown (5YR 4/3) dry; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; weakly smeary; few very fine and fine roots; about 30 percent by volume pumice 2 to 10 millimeters in diameter; strongly acid; abrupt irregular boundary.

Bs1—3 to 6 inches; reddish brown (5YR 4/4) very cindery loamy sand, reddish yellow (5YR 6/6) dry; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; weakly smeary; few very fine and fine roots; about 40 percent by volume pumice 2 to 10 millimeters in diameter; moderately acid; NaF pH 11.5; abrupt irregular boundary.

Bs2—6 to 14 inches; strong brown (7.5YR 4/6) very cindery loamy sand, reddish yellow (7.5YR 7/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; about 40 percent by volume pumice 2 to 10 millimeters in diameter; moderately acid; NaF pH 12.0+; abrupt irregular boundary.

2Eb—14 to 17 inches; grayish brown (10YR 5/2) loam, light gray (10YR 7/2) dry; weak fine subangular blocky structure; soft, friable, nonsticky and slightly plastic; moderately smeary; few very fine and fine roots; about 5 percent hard sandstone pebbles; strongly acid; NaF pH 9.6; abrupt smooth boundary.

2Bwb1—17 to 25 inches; dark yellowish brown (10YR 4/6) very gravelly loam, brownish yellow (10YR 6/6) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; moderately smeary; few very fine, fine, and coarse roots; about 35 percent hard sandstone

pebbles; strongly acid; NaF pH 11.0; abrupt smooth boundary.

2Bwb2—25 to 36 inches; dark yellowish brown (10YR 4/6) very gravelly sandy loam, brownish yellow (10YR 6/6) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; moderately smeary; few fine roots; about 30 percent hard sandstone pebbles and 15 percent soft sandstone cobbles; moderately acid; NaF pH 11.0; abrupt smooth boundary.

2BCb—36 to 60 inches; olive brown (2.5Y 4/4) extremely cobbly loamy sand, pale yellow (2.5Y 7/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; about 20 percent hard sandstone pebbles and 50 percent sandstone cobbles; moderately acid; NaF pH 11.0.

The upper 4 to 14 inches of the particle-size control section has 35 to 50 percent volcanic pumice and cinders 2 to 10 millimeters in diameter and 25 to 40 percent volcanic ash. The lower part has less than 10 percent volcanic ash and pumice and 40 to 70 percent sandstone or andesite pebbles and cobbles by volume.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 1 or 2 when moist and dry. Reaction is very strongly acid to moderately acid.

The Bhs horizon has value of 3 or 4 when moist and 4 or 5 when dry and chroma of 2 to 4 when moist and dry. Reaction is very strongly acid to moderately acid.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6 when moist and 5 to 8 when dry, and chroma of 4 to 8 when moist and dry. Reaction is strongly acid or moderately acid.

The 2Eb horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 1 or 2 when moist and dry. It is loam or sandy loam in the fine-earth fraction. It has 5 to 20 percent coarse fragments by volume. Reaction is strongly acid or moderately acid.

The 2Bwb horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 4 to 6 when moist and dry. It is loam or sandy loam in the fine-earth fraction. It has 35 to 60 percent coarse fragments by volume. Reaction is strongly acid or moderately acid.

The 2BCb horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is sandy loam or loamy sand in the fine-earth fraction. It has 50 to 70 percent coarse fragments by volume. Reaction is strongly acid or moderately acid.

Foss Series

The Foss series consists of very deep, well drained soils formed in volcanic ash and pumice over residuum and colluvium derived from andesite. These soils are on the interior side slopes and back slopes of cirque basins, on broad ridge crests, and on benches. Slopes are 8 to 65 percent. Elevation is 3,000 to 5,000 feet. The average annual precipitation is 70 to 110 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 110 to 130 days.

These soils are medial over loamy-skeletal, mixed Typic Cryorthods.

Typical pedon of Foss stony sandy loam, 8 to 30 percent slopes, in Pierce County, about 2 miles east of the junction of Lighting Creek and the White River, 400 feet west and 1,600 feet north of the southeast corner of sec. 32, T. 19 N., R. 10 E.

A—0 to 4 inches; very dark brown (10YR 2/2) stony sandy loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 10 percent pebbles and 5 percent stones; strongly acid; abrupt smooth boundary.

Bs1—4 to 10 inches; yellowish brown (10YR 5/4) gravelly sandy loam, light yellowish brown (10YR 6/4) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; many very fine, fine, medium, and coarse roots; about 15 percent pebbles; moderately acid; gradual smooth boundary.

Bs2—10 to 16 inches; strong brown (7.5YR 4/6) gravelly sandy loam, brown (7.5YR 5/4) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; common very fine, fine, and medium roots; about 30 percent pebbles; moderately acid; gradual irregular boundary.

2Bs3—16 to 32 inches; dark brown (7.5YR 3/4) very cobbly silt loam, reddish brown (5YR 4/4) dry; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium roots; few thin silt coatings on faces of peds and in pores; about 35 percent cobbles and 15 percent pebbles; strongly acid; clear wavy boundary.

2BC1—32 to 48 inches; dark reddish brown (5YR 3/3) very gravelly silt loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; few fine and medium roots; common thin silt coatings on faces of peds and in

pores; about 45 percent pebbles and 5 percent cobbles; moderately acid; abrupt smooth boundary.

2BC2—48 to 60 inches; dark reddish brown (5YR 3/4) very gravelly silt loam, reddish brown (5YR 4/4) dry; strong thin and medium platy structure; very hard, very firm, slightly sticky and slightly plastic; moderately smeary; common thin to thick silt coatings on faces of peds and in pores; about 50 percent pebbles and 5 percent cobbles; moderately acid.

The control section is loam or silt loam. It has 35 to 55 percent rock fragments, including 5 to 40 percent cobbles. Reaction is strongly acid or moderately acid throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. It has 2 to 10 percent stones.

The Bs horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6 when moist and dry. It is sandy loam or loam in the fine-earth fraction. It has 15 to 35 percent gravel.

The 2Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry. It is loam or silt loam in the fine-earth fraction. It has 35 to 60 percent coarse fragments.

The 2BC horizon is loam or silt loam in the fine-earth fraction. It has 40 to 60 percent coarse fragments.

Gallup Series

The Gallup series consists of very deep, well drained soils formed in volcanic ash and colluvium derived from breccia. These soils are on glacially modified mountain ridgetops and back slopes. Slopes are 15 to 65 percent. Elevation is 2,700 to 3,600 feet. The average annual precipitation is 80 to 100 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 95 to 120 days.

These soils are coarse-loamy, mixed Humic Cryorthods.

Typical pedon of Gallup loam, breccia substratum, 30 to 65 percent slopes, in King County, about 3 miles southwest of North Bend, 1,800 feet north and 700 feet east of the southwest corner of sec. 20, T. 23 N., R. 8 E.

Oa—2 inches to 0; undecomposed needles and twigs.

A—0 to 4 inches; dark reddish brown (5YR 3/2) loam, brown (7.5YR 5/4) dry; moderate fine granular structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; many very fine, fine, and medium roots; many very fine irregular pores; about 5 percent pebbles; very strongly acid; abrupt smooth boundary.

E—4 to 7 inches; dark reddish gray (5YR 4/2) loam, pinkish gray (5YR 6/2) dry; moderate very fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many very fine irregular pores; about 5 percent pebbles; extremely acid; abrupt wavy boundary.

Bhs—7 to 15 inches; dark reddish brown (5YR 3/4) loam, reddish brown (5YR 5/3) dry; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 5 percent pebbles; extremely acid; clear wavy boundary.

Bs1—15 to 23 inches; dark brown (7.5YR 4/4) loam, brown (7.5YR 5/4) dry; moderate very fine and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; many very fine irregular pores; about 10 percent pebbles; extremely acid; gradual wavy boundary.

Bs2—23 to 36 inches; dark yellowish brown (10YR 4/4) gravelly loam, light yellowish brown (10YR 6/4) dry; weak very fine and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; many very fine irregular pores; about 20 percent pebbles and 5 percent cobbles; very strongly acid; gradual wavy boundary.

Bs3—36 to 49 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; many very fine irregular pores; about 25 percent pebbles and 5 percent cobbles; very strongly acid; clear smooth boundary.

C—49 to 60 inches; dark yellowish brown (10YR 4/6) gravelly loam, very pale brown (10YR 7/4) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine irregular pores; about 15 percent pebbles and 5 percent cobbles; extremely acid.

The content of rock fragments in the control section ranges from 15 to 35 percent.

The A horizon has hue of 5YR or 7.5YR, value of 4 or 5 when dry, and chroma of 2 to 4 when moist and dry. Some pedons do not have an A horizon.

The E horizon has hue of 5YR or 7.5YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1

or 2 when moist and dry. It is loam or silt loam.

The Bhs and Bs1 horizons have hue of 5YR or 7.5YR, value of 3 or 4 when moist, and chroma of 3 or 4 when moist and 3 to 6 when dry. They are loam, silt loam, gravelly loam, or gravelly silt loam.

The Bs2 and Bs3 horizons have hue of 7.5YR or 10YR, value of 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. They are gravelly loam, gravelly silt loam, or gravelly sandy loam.

The C horizon has value of 6 or 7 when dry and chroma of 4 to 6 when moist and dry. It is gravelly loam, gravelly sandy loam, very gravelly loam, or very gravelly sandy loam.

Getchell Series

The Getchell series consists of moderately well drained soils formed in volcanic ash, colluvium, and dense glacial till. These soils are moderately deep to ortstein. They are on mountain back slopes and plateaus. Slopes are 6 to 65 percent. Elevation is 1,800 to 3,000 feet. The average annual precipitation is 80 to 95 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 95 to 115 days.

These soils are coarse-loamy, mixed, ortstein Typic Cryorthods.

Typical pedon of Getchell loam, 15 to 30 percent slopes, in King County, about 1 mile southwest of Lake Hancock, 2,200 feet west and 1,100 feet north of the southeast corner of sec. 17, T. 24 N., R. 9 E.

Oi—3 to 2 inches; undecomposed needles and twigs.

Oa—2 inches to 0; decomposed organic mat.

E—0 to 3 inches; dark gray (10YR 4/1) loamy sand, gray (10YR 6/1) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; common very fine, fine, and medium and few coarse roots; many very fine irregular pores; about 5 percent pebbles; extremely acid; abrupt wavy boundary.

Bhs—3 to 7 inches; black (5YR 2/1) silt loam, dark reddish brown (5YR 3/2) dry; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 5 percent pebbles; very strongly acid; abrupt wavy boundary.

Bs1—7 to 12 inches; dark reddish brown (5YR 3/4) loam, reddish brown (5YR 4/4) dry; moderate fine and medium angular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; common very fine and few fine roots; about 10 percent pebbles; very strongly acid; clear wavy boundary.

Bs2—12 to 19 inches; dark brown (7.5YR 3/4) loam, brown (7.5YR 5/4) dry; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; many very fine irregular pores; about 5 percent pebbles; very strongly acid; abrupt wavy boundary.

Bs3—19 to 30 inches; light yellowish brown (10YR 6/4) gravelly loam, very pale brown (10YR 7/4) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; many very fine irregular pores; about 15 percent pebbles; very strongly acid; clear wavy boundary.

2Bsm—30 to 60 inches; light olive brown (2.5Y 5/4) ortstein that breaks to loam, pale yellow (2.5Y 7/4) dry; massive; hard, firm, slightly sticky and slightly plastic; weakly smeary; about 5 percent pebbles; very strongly acid.

The depth to ortstein ranges from 20 to 40 inches. The content of rock fragments in the control section ranges from 0 to 10 percent.

The E horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs horizon has hue of 5YR or 7.5YR, value of 2 or 3 when moist and 3 or 4 when dry, and chroma of 1 or 2 when moist and dry. It is silt loam or loam.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 6 when moist and 4 to 7 when dry, and chroma of 4 to 6 when moist and dry. It is loam or gravelly loam.

The 2Bsm horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is ortstein that breaks to silt loam, loam, or gravelly loam.

Greenwater Series

The Greenwater series consists of very deep, somewhat excessively drained soils formed in alluvium derived from andesite and pumice. These soils are on terraces. Slopes are 0 to 8 percent. Elevation is 500 to 1,800 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 49 degrees F. The frost-free period is 140 to 160 days.

These soils are mixed, mesic Dystric Xeropsamments.

Typical pedon of Greenwater loamy sand, 0 to 8 percent slopes, in Pierce County, about 3 miles west of the Nisqually Park Ranger Station, 1,800 feet south and 200 feet east of the northwest corner of sec. 31, T. 15 N., R. 7 E.

Oi—3 inches to 0.5 inch; undecomposed twigs, leaves, and moss.
Oa—0.5 inch to 0; decomposed organic mat.
A—0 to 5 inches; very dark brown (10YR 2/2) loamy sand, dark grayish brown (10YR 4/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many fine irregular pores; about 10 percent pumice 2 to 5 millimeters in diameter; strongly acid; clear smooth boundary.
Bs—5 to 17 inches; dark brown (7.5YR 3/4) loamy sand, brown (7.5YR 5/4) dry; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; many fine irregular pores; about 10 percent pumice 2 to 5 millimeters in diameter; moderately acid; abrupt smooth boundary.
C1—17 to 25 inches; dark grayish brown (10YR 4/2) sand, light brownish gray (10YR 6/2) dry; massive; slightly hard, firm, nonsticky and nonplastic; few very fine roots; common fine irregular pores; about 10 percent pumice 2 to 5 millimeters in diameter; moderately acid; clear smooth boundary.
C2—25 to 51 inches; dark gray (10YR 4/1) coarse sand, gray (10YR 6/1) dry; single grain; loose; many fine irregular pores; about 5 percent pumice 2 to 5 millimeters in diameter and 5 percent pebbles; slightly acid; clear smooth boundary.
2C3—51 to 60 inches; dark gray (10YR 4/1) very gravelly coarse sand, gray (10YR 6/1) dry; single grain; loose; many fine irregular pores; about 55 percent pebbles and 5 percent pumice 2 to 5 millimeters in diameter; slightly acid.

The thickness of the solum is 14 to 24 inches. In the control section, the content of rock fragments ranges from 0 to 10 percent and the content of pumice ranges from 5 to 15 percent.

The A horizon has value of 2 or 3 when moist and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry. It is loamy sand or sand.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 1 or 2 when moist and dry. It is sand or coarse sand.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 1 or 2 when moist and dry. It is very gravelly sand or very gravelly coarse sand.

Grotto Series

The Grotto series consists of very deep, somewhat excessively drained soils formed in alluvium. These soils are on river terraces. Slopes are 0 to 8 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 60 to 100 inches, and the average annual air temperature is about 45 degrees F. The frost-free period is 135 to 155 days.

These soils are sandy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Grotto gravelly loamy sand, 0 to 8 percent slopes, in King County, about 0.5 mile south of Greenwater, 2,400 feet south and 1,300 feet west of the northeast corner of sec. 10, T. 19 N., R. 9 E.

Oi—2 inches to 1 inch; forest litter, including undecomposed needles, bark, and twigs.
Oe—1 inch to 0; decomposed needles, twigs, and bark.
E—0 to 5 inches; brown (7.5YR 5/2) gravelly loamy sand, pinkish gray (7.5YR 7/2) dry; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; many fine and common medium and coarse roots; many fine irregular pores; about 30 percent pebbles; moderately acid; clear smooth boundary.
Bhs—5 to 19 inches; dark brown (7.5YR 3/2) very gravelly coarse sand, brown (10YR 4/3) dry; weak fine subangular blocky structure; common fine, medium, and coarse roots; many fine irregular pores; about 40 percent pebbles; moderately acid; clear wavy boundary.
Bs—19 to 36 inches; brown (10YR 4/3) and strong brown (7.5YR 5/6) very gravelly coarse sand, pale brown (10YR 6/3) and reddish yellow (7.5YR 7/6) dry; massive; hard when in place and slightly hard or soft when removed, firm when in place and friable when removed, nonsticky and nonplastic; common medium roots; many fine irregular pores; about 45 percent pebbles; slightly acid; clear smooth boundary.
C—36 to 60 inches; yellowish brown (10YR 5/4 and 5/6) very gravelly sand, light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) dry; massive; hard when in place and slightly hard when removed, firm when in place and friable when removed, nonsticky and nonplastic; few medium roots; about 55 percent pebbles; slightly acid.

The particle-size control section ranges from 35 to 55 percent coarse fragments by volume.

The E horizon has hue of 7.5YR or 10YR, value of 2 to 5 when moist and 4 to 7 when dry, and chroma of 2 to 4 when moist and dry. The upper 3 inches has value and chroma of 2 or 3 when moist. The content of coarse fragments is 20 to 50 percent by volume. Reaction is strongly acid or very strongly acid.

The Bs horizon has hue of 7.5YR or 10YR, value of

3 to 5 when moist, and chroma of 3 to 6 when moist and dry. It is very gravelly loamy sand, very gravelly sand, or very gravelly coarse sand. It has 35 to 60 percent coarse fragments. Reaction is moderately acid or slightly acid.

The C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5 when moist and 4 to 7 when dry, and chroma of 2 to 6 when moist and dry. It is very gravelly sand or very gravelly coarse sand. It has 35 to 60 percent coarse fragments. Reaction is moderately acid or slightly acid.

Hartnit Series

The Hartnit series consists of well drained soils formed in glacial till, volcanic ash, and colluvium weathered from andesite. These soils are moderately deep to bedrock. They are on glacially modified mountain ridgetops and back slopes. Slopes are 8 to 30 percent. Elevation is 2,600 to 3,600 feet. The average annual precipitation is 80 to 100 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 90 to 100 days.

These soils are coarse-loamy, mixed Typic Cryorthods.

Typical pedon of Hartnit silt loam, 8 to 30 percent slopes, in King County, about 1 mile east of Kernston, 200 feet west and 400 feet south of the northeast corner of sec. 30, T. 23 N., R. 8 E.

Oa—7 inches to 0; decomposed needles, leaves, and twigs.

A—0 to 3 inches; dark brown (7.5YR 4/4) silt loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 10 percent pebbles; strongly acid; abrupt smooth boundary.

Bhs—3 to 11 inches; strong brown (7.5YR 4/6) gravelly silt loam, strong brown (7.5YR 5/6) dry; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common very fine and few fine roots; many very fine irregular pores; about 20 percent pebbles; strongly acid; clear smooth boundary.

Bs—11 to 20 inches; dark yellowish brown (10YR 4/4) gravelly silt loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common very fine roots; many very fine irregular pores; about 25 percent pebbles; strongly acid; abrupt smooth boundary.

C—20 to 31 inches; dark yellowish brown (10YR 4/4) very gravelly silt loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; few very fine roots; many very fine irregular pores; about 40 percent pebbles; strongly acid; abrupt smooth boundary.

2R—31 inches; andesite.

The depth to bedrock is 20 to 40 inches. The overall content of rock fragments in the particle-size control section ranges from 15 to 35 percent by weighted average, although individual horizons contain as much as 50 percent.

The A horizon has hue of 5YR or 7.5YR, value of 3 or 4 when moist, and chroma of 3 or 4 when moist and dry. Some pedons have an E horizon.

The Bhs and Bs horizons have hue of 7.5YR or 10YR, value of 3 to 5 when moist and 4 or 5 when dry, and chroma of 3 to 6 when moist and dry. They are silt loam, loam, gravelly silt loam, or gravelly loam.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 to 7 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly silt loam, gravelly loam, very gravelly silt loam, or very gravelly loam.

Haywire Series

The Haywire series consists of well drained soils formed in volcanic ash and pumice over residuum and colluvium derived from extrusive igneous rocks or from tuff and breccia. These soils are moderately deep to bedrock. They are on ridgetops and mountain back slopes. Slopes are 8 to 65 percent. Elevation is 3,400 to 6,000 feet. The average annual precipitation is 80 to 120 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 90 to 110 days.

These soils are loamy-skeletal, mixed Typic Cryohumods.

Typical pedon of Haywire sandy loam, 30 to 65 percent slopes, in King County, on Grass Mountain, 2,250 feet east and 1,900 feet north of the southwest corner of sec. 21, T. 20 N., R. 8 E.

Oi—1 to 0.5 inch; loose forest litter, including needles and twigs; abrupt smooth boundary.

Oa—0.5 inch to 0; decomposed organic litter; common fine, medium, and coarse roots; abrupt smooth boundary.

E—0 to 1 inch; very dark gray (10YR 3/1) loamy sand (volcanic ash and pumice), gray (10YR 5/1) dry; single grain; loose; weakly smeary; many very fine, fine, and medium roots; very strongly acid; abrupt smooth boundary.

Bhs—1 to 4 inches; dusky red (2.5YR 3/2) loam (volcanic ash and pumice), dark reddish brown (5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; about 5 percent pebbles; very strongly acid; clear irregular boundary.

Bs1—4 to 9 inches; dark reddish brown (5YR 3/4) loam (volcanic ash and pumice), dark brown (7.5YR 3/4) dry; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, and medium and common coarse roots; about 10 percent pebbles; very strongly acid; clear irregular boundary.

Bs2—9 to 17 inches; dark reddish brown (5YR 3/4) gravelly loam, dark brown (7.5YR 4/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and many fine and medium roots; about 25 percent gravel and 5 percent cobbles; strongly acid; clear irregular boundary.

Bs3—17 to 25 inches; dark brown (7.5YR 3/4) very cobbly loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium roots; about 25 percent gravel, 10 percent cobbles, and 5 percent stones; strongly acid; clear smooth boundary.

BC1—25 to 28 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, light yellowish brown (10YR 6/4) dry; massive; soft, friable, slightly sticky and slightly plastic; about 35 percent gravel, 20 percent cobbles, and 10 percent stones; strongly acid; clear smooth boundary.

BC2—28 to 36 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, light yellowish brown (10YR 6/4) dry; massive; soft, friable, slightly sticky and slightly plastic; about 50 percent gravel, 20 percent cobbles, and 10 percent stones; moderately acid; abrupt smooth boundary.

2R—36 inches; fractured andesite.

The depth to lithic contact is 20 to 40 inches. The control section is sandy loam, loam, or silt loam in the fine-earth fraction. It has 35 to 80 percent rock fragments.

The E horizon has hue of 10YR or 7.5YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 1 or 2 when moist and dry. It has 0 to 10 percent hard cinders and pebbles. In some pedons it is weakly expressed or does not occur.

The Bhs horizon has hue of 2.5YR, 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry. It is sandy loam, loam, loamy sand, gravelly sandy loam, or gravelly loam. It has 5 to 30 percent pebbles and hard cinders. Reaction is very strongly acid or strongly acid.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 3 to 6 when dry, and chroma of 3 to 6 when moist and dry. The upper part of this horizon is loam, gravelly sandy loam, very gravelly sandy loam, very gravelly loam, gravelly loam, or very cobbly loam. It has 10 to 40 percent pebbles and 0 to 10 percent cobbles. The lower part is very cobbly loam, extremely gravelly loam, extremely gravelly sandy loam, gravelly loam, or very gravelly loam. It has 25 to 50 percent pebbles, 5 to 15 percent cobbles, and 0 to 5 percent stones.

The BC horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is very gravelly loam, very gravelly silt loam, or extremely cobbly loam. It ranges from 30 to 60 percent pebbles, 10 to 20 percent cobbles, and 0 to 10 percent stones. Reaction is strongly acid or moderately acid.

Hinker Series

The Hinker series consists of well drained soils formed in volcanic ash and in colluvium and slope alluvium derived from phyllite. These soils are moderately deep to bedrock. They are on glacially modified mountain shoulder slopes. Slopes are 8 to 90 percent. Elevation is 3,500 to 4,200 feet. The average annual precipitation is 85 to 100 inches, and the mean annual air temperature is about 41 degrees F. The frost-free period is 85 to 100 days.

These soils are loamy-skeletal, mixed Humic Cryorthods.

Typical pedon of Hinker gravelly sandy loam, 30 to 65 percent slopes, in King County, about 4 miles southeast of Skykomish, 2,000 feet west and 1,800 feet south of the northeast corner of sec. 4, T. 25 N., R. 12 E.

Oi—2 inches to 0; undecomposed needles, leaves, and twigs.

E—0 to 3 inches; brown (7.5YR 5/2) gravelly loamy sand, pinkish gray (7.5YR 7/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; many very fine irregular pores; about 15 percent pebbles; NaF pH 9.4; very strongly acid; abrupt smooth boundary.

Bhs1—3 to 8 inches; dark reddish brown (5YR 3/4) gravelly silt loam, dark brown (7.5YR 4/4) and

strong brown (7.5YR 5/6) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common very fine, fine, medium, and coarse roots; many very fine irregular pores; about 10 percent pebbles, 10 percent channers, and 5 percent cobbles; NaF pH 11.0; very strongly acid; clear wavy boundary.

Bhs2—8 to 17 inches; dark brown (7.5YR 3/4) and strong brown (7.5YR 4/6) very channery loam, yellowish brown (10YR 5/6) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and few fine roots; many very fine irregular pores; about 25 percent channers and 20 percent pebbles; NaF pH 12.0; very strongly acid; clear wavy boundary.

2BC—17 to 22 inches; dark grayish brown (2.5Y 4/2) very channery loam, light yellowish brown (2.5Y 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine roots; many very fine irregular pores; about 45 percent channers and 10 percent pebbles; NaF pH 11.5; strongly acid; clear smooth boundary.

2C—22 to 38 inches; dark grayish brown (2.5Y 4/2) extremely channery loam, light brownish gray (2.5Y 6/2) dry; massive; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine irregular pores; about 65 percent channers and 5 percent cobbles; NaF pH 11.0; strongly acid; clear smooth boundary.

2R—38 inches; highly fractured phyllite.

The depth to bedrock is 20 to 40 inches. The particle-size control section has 35 to 60 percent phyllite channers and pebbles and 10 to 25 percent flagstones.

The E horizon has hue of 5YR, 7.5YR, or 10YR and value of 4 to 6 when moist and 5 to 7 when dry.

The Bhs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 4 to 6 when moist and dry. It is channery or gravelly loam, channery or gravelly silt loam, very channery loam, or very channery silt loam.

The 2BC and 2C horizons have hue of 2.5Y or 5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. They are very channery loam, extremely channery loam, or extremely channery silt loam.

Humaquepts

Humaquepts consist of very deep, poorly drained soils formed in alluvium. They are on terraces. Slopes are 0 to 5 percent. Elevation is 1,800 to 2,800 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 130 to 150 days.

Typical pedon of Humaquepts, 0 to 5 percent slopes, in Pierce County, about 2.5 miles southeast of Ohop, 2,300 feet east and 1,800 feet south of the northwest corner of sec. 34, T. 17 N., R. 5 E.

Oi—1 inch to 0; well decomposed organic material.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine irregular pores; about 10 percent pebbles; very strongly acid; clear smooth boundary.

A2—5 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; many fine irregular pores; about 10 percent pebbles; very strongly acid; clear smooth boundary.

Bg—13 to 25 inches; grayish brown (10YR 5/2) gravelly silty clay loam, light gray (10YR 7/2) dry; common medium prominent mottles, yellowish red (5YR 5/8) moist and dry; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few fine roots; many very fine and fine tubular pores; about 15 percent pebbles; few thin clay films on faces of peds; strongly acid; clear smooth boundary.

Cg—25 to 60 inches; grayish brown (10YR 5/2) very gravelly loam, light gray (10YR 7/2) dry; massive; hard, firm, slightly sticky and slightly plastic; about 40 percent pebbles and 15 percent cobbles; strongly acid.

The content of clay in the particle-size control section ranges from 5 to 35 percent. The thickness of the solum is 15 to 40 inches. The content of rock fragments in the particle-size control section ranges from 15 to 50 percent. The distribution of organic carbon varies with increasing depth.

The A horizon has value of 2 or 3 when moist and 4 to 6 when dry. The Bg horizon has hue of 10YR or 2.5Y and value of 4 or 5 when moist and 6 or 7 when dry. It is loam, gravelly sandy loam, or gravelly silty clay loam. The Cg horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry. It is silty clay loam, gravelly sand, or very gravelly loam.

Humods

Humods consist of moderately deep to very deep, well drained soils formed in colluvium derived from granite. They are in areas of avalanche on back slopes in the mountains. Slopes are 30 to 100 percent. Elevation is 1,500 to 5,000 feet. The average annual precipitation is 90 to 120 inches, and the mean annual air temperature is about 39 degrees F. The frost-free period is 110 to 130 days.

Typical pedon of Humods, in an area of Orthents, avalanche chutes-Humods complex, 30 to 100 percent slopes, in King County, about 1 mile east of the Skykomish Ranger Station; 2,500 feet east and 1,100 feet south of the northwest corner of sec. 30, T. 26 N., R. 13 E.

A—0 to 5 inches; black (10YR 2/1) very gravelly sandy loam, dark brown (7.5YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 5 percent stones, 5 percent cobbles, and 35 percent pebbles; strongly acid; abrupt wavy boundary.

Bhs—5 to 14 inches; dark brown (7.5YR 4/4) extremely stony sandy loam, light yellowish brown (10YR 6/4) dry; dark reddish brown (5YR 3/2) organic stains, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 40 percent stones, 20 percent cobbles, and 25 percent pebbles; very strongly acid; clear wavy boundary.

Bs—14 to 26 inches; dark yellowish brown (10YR 3/4) extremely stony sandy loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; many very fine irregular pores; about 50 percent stones, 20 percent cobbles, and 20 percent pebbles; strongly acid; abrupt wavy boundary.

2R—26 inches; weathered granite.

The depth to bedrock is 20 to 80 inches. The content of rock fragments in the control section ranges from 50 to 90 percent.

The A horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 to 5 when moist and 4 to 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly sandy loam, very cobbly loamy sand, or extremely stony sandy loam.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is extremely stony sandy loam or very gravelly loamy sand.

Index Series

The Index series consists of deep and very deep, well drained soils formed in volcanic ash and pumice mixed with colluvium derived from granitic and metamorphic rocks. These soils are on mountain back slopes. Slopes are 8 to 90 percent. Elevation is 2,200 to 3,600 feet. The average annual precipitation is 75 to 110 inches, and the mean annual air temperature is about 42 degrees F. The average frost-free period is 110 to 130 days.

These soils are sandy-skeletal, mixed Haplic Cryohumods.

Typical pedon of Index loamy sand, 65 to 90 percent slopes, in King County, on the east side of the Hansen Creek drainage, about 100 feet east of Forest Service Road 2291.1, about 2,300 feet south and 1,800 feet west of the northeast corner of sec. 22, T. 22 N., R. 10 E.

Oi—3 to 2 inches; loose forest litter, including needles, twigs, bark, and moss.

Oa—2 inches to 0; black (10YR 2/1), highly decomposed organic material that is bound by roots; abrupt smooth boundary.

E—0 to 2 inches; gray (10YR 5/1) loamy sand (volcanic ash and pumice), light gray (N 7/0) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine roots; very strongly acid; abrupt wavy boundary.

Bhs—2 to 4 inches; dark reddish brown (5YR 3/3) sandy loam (volcanic ash and pumice), dark brown (7.5YR 4/4) dry; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and nonplastic; weakly smeary; many very fine and fine and few medium and coarse roots; moderately acid; abrupt wavy boundary.

Bs1—4 to 7 inches; variegated reddish brown (5YR 4/4) and light gray (2.5Y 7/2) loamy sand (volcanic ash and pumice), variegated yellowish red (5YR 5/6) and white (2.5Y 8/2) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and few medium and coarse roots; moderately acid; abrupt irregular boundary.

Bs2—7 to 15 inches; dark brown (7.5YR 4/4) very

cobbly loamy sand, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium and coarse roots; about 15 percent pebbles and 25 percent cobbles; strongly acid; clear smooth boundary.

2BC—15 to 23 inches; dark yellowish brown (10YR 4/4) very gravelly loamy sand, strong brown (7.5YR 5/6) dry; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine and few moderate and coarse roots; about 30 percent pebbles and 20 percent cobbles; moderately acid; clear smooth boundary.

2C1—23 to 40 inches; light yellowish brown (10YR 6/4) extremely cobbly sand, very pale brown (10YR 7/4) dry; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; about 25 percent pebbles and 40 percent cobbles; strongly acid; gradual smooth boundary.

2C2—40 to 57 inches; pale yellow (2.5Y 7/4) extremely cobbly sand, light yellowish brown (10YR 6/4) dry; massive; slightly hard, very friable, nonsticky and nonplastic; about 35 percent pebbles and 30 percent cobbles; strongly acid; clear smooth boundary.

2Cr—57 inches; yellowish brown (10YR 5/6), highly weathered granodiorite, very pale brown (10YR 8/4) dry; can be cut by a spade with difficulty and breaks to very gravelly coarse sand; about 60 percent hard pebbles; slightly acid.

The depth to paralithic contact is 40 to 70 inches. The content of rock fragments, including hard cinders, in the particle-size control section ranges from 35 to 70 percent by volume.

The E horizon has hue of 10YR or 7.5YR or is neutral in hue. It has value of 5 to 7 when moist and 6 or 7 when dry and chroma of 0 to 2 when moist and dry. Reaction is moderately acid to very strongly acid.

The Bhs horizon has value of 3 to 5 when moist and 4 or 5 when dry and chroma of 3 to 6 when moist and dry. Reaction is moderately acid to very strongly acid.

The Bs horizon has hue of 2.5Y to 5YR. Where it has hue of 10YR to 5YR, it has value of 3 or 4 when moist and 4 or 5 when dry and chroma of 4 to 6 when moist and dry. Where it has hue of 2.5Y, it has value of 6 to 8 when moist and 7 or 8 when dry and chroma of 2 or 3 when moist and dry. This horizon is sand or loamy sand in the fine-earth fraction. It has 30 to 60 percent rock fragments in the lower part. The fine-earth fraction is more than 60 percent volcanic ash and pumice. Reaction is moderately acid or strongly acid.

The 2BC horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6 when moist and dry. The fine-earth fraction is loamy sand or sand. This horizon has 40 to 60 percent rock fragments by volume. Reaction is moderately acid or strongly acid.

The 2C horizon has hue of 10YR or 2.5YR and value of 6 or 7 when moist and dry. It has 50 to 70 percent coarse fragments by volume. The coarse fragments are residual rock fragments. Reaction is moderately acid or strongly acid.

The bedrock is granitic rock or low-grade metamorphic rock, such as slate or phyllite.

Jonas Series

The Jonas series consists of deep and very deep, well drained soils formed in colluvium and residuum derived from andesite or breccia and tuff. The colluvium and residuum have an admixture of volcanic ash. These soils are on mountain back slopes. Slopes are 15 to 90 percent. Elevation is 1,800 to 2,800 feet. The average annual precipitation is 60 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 140 to 160 days.

These soils are medial, frigid Andic Haplumbrepts.

Typical pedon of Jonas gravelly silt loam, 30 to 65 percent slopes, in Pierce County, about 6.5 miles southeast of Ohop, 2,200 feet east and 1,200 feet south of the northwest corner of sec. 18, T. 16 N., R. 6 E.

Oa—2 inches to 0; undecomposed needles, leaves, and twigs.

A1—0 to 7 inches; dark brown (7.5YR 3/2) gravelly silt loam, brown (7.5YR 5/2) dry; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, medium, and coarse roots; many very fine irregular pores; about 15 percent pebbles, 5 percent cobbles, and 10 percent shotlike aggregate; strongly acid; clear wavy boundary.

A2—7 to 16 inches; dark brown (10YR 3/3) gravelly silt loam, brown (10YR 5/3) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, medium, and coarse roots; common very fine and fine irregular and tubular pores; about 20 percent pebbles and 5 percent cobbles; strongly acid; clear wavy boundary.

Bw1—16 to 34 inches; dark brown (10YR 3/3) gravelly clay loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; weakly smeary; few very fine and fine roots; common very fine tubular pores; few thin, patchy clay films on faces of some peds; about 20 percent pebbles and 5 percent cobbles;

moderately acid; gradual wavy boundary.
Bw2—34 to 42 inches; dark brown (10YR 4/3) gravelly clay loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; weakly smeary; few very fine roots; common very fine tubular pores; few thin, patchy clay films on faces of some peds; about 25 percent pebbles and 5 percent cobbles; moderately acid; clear wavy boundary.
C—42 to 60 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, yellowish brown (10YR 5/4) dry; massive; hard, firm, slightly sticky and slightly plastic; weakly smeary; few very fine tubular pores; about 30 percent pebbles and 2 percent cobbles; moderately acid.

The umbric epipedon is 15 to 36 inches thick. The depth to bedrock and the thickness of the solum range from 40 to more than 60 inches. The content of rock fragments in the particle-size control section ranges from 15 to 35 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam, gravelly clay loam, gravelly silt loam, or cobbly loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is gravelly clay loam, gravelly loam, or very gravelly loam.

Kaleetan Series

The Kaleetan series consists of deep and very deep, well drained soils formed in a mixture of volcanic ash and pumice over colluvium derived from andesite, tuff, breccia, and glacial till. These soils are on glacially modified mountain back slopes and toe slopes. Slopes are 8 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 100 to 120 inches, the average annual air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplohumods.

Typical pedon of Kaleetan sandy loam, 30 to 65 percent slopes, in King County, about 200 feet east of Cedar River Watershed Road 100, about 800 feet east and 2,200 feet south of the northwest corner of sec. 26, T. 22 N., R. 9 E.

Oi—4 to 3 inches; needles, moss, and twigs.
Oa—3 inches to 0; dark reddish brown (5YR 2.5/2), highly decomposed forest litter.
E—0 to 1.5 inches; brown (7.5YR 5/2) loamy sand (volcanic ash and pumice), pinkish gray (7.5YR 7/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; about 5 percent subangular pebbles; NaF pH less than 9.2; very strongly acid; abrupt wavy boundary.
Bhs—1.5 to 4 inches; variegated 70 percent dark reddish brown (5YR 3/3) and 30 percent yellowish red (5YR 5/6) sandy loam (volcanic ash and pumice), 70 percent reddish brown (5YR 4/4) and 30 percent reddish yellow (7.5YR 6/6) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; nonsmeary; common fine and medium roots; about 5 percent subangular pebbles; NaF pH 11.5; very strongly acid; abrupt broken boundary.
Bs1—4 to 9 inches; variegated 70 percent dark brown (7.5YR 4/4) and 30 percent yellowish red (5YR 5/8) gravelly sandy loam (volcanic ash), 70 percent reddish yellow (7.5YR 6/6) and 30 percent reddish yellow (7.5YR 6/8) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; about 20 percent subangular pebbles and 10 percent cobbles; NaF pH 12.0+; strongly acid; clear wavy boundary.
2Bs2—9 to 23 inches; brown (7.5YR 4/4) very gravelly sandy loam, light brown (7.5YR 6/4) dry; yellowish red (5YR 5/8) stains on rock fragments; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; about 35 percent subangular pebbles and 15 percent cobbles; NaF pH 12.0+; very strongly acid; gradual wavy boundary.
2BC—23 to 35 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) dry; yellowish red (5YR 5/8) stains on rock fragments; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; about 45 percent subangular pebbles and 15 percent cobbles; NaF pH 12.0+; strongly acid; clear smooth boundary.
2C1—35 to 56 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, very pale brown (10YR 7/4) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; about 45 percent subangular pebbles and 15 percent cobbles; NaF pH 12.0+; moderately acid; clear wavy boundary.
2C2—56 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, very pale brown

(10YR 7/4) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; about 60 percent subangular pebbles and 20 percent cobbles; NaF pH 12.0+; moderately acid.

Some areas are underlain by dense glacial till at a depth of 40 to 60 inches. The content of rock fragments in the particle-size control section ranges from 35 to 60 percent by volume.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 5 to 8 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs and Bs horizons have hue of 5YR or 7.5YR when moist and dry and are variegated. The Bs horizon is gravelly sandy loam or gravelly loam. It has 15 to 30 percent rock fragments by volume.

The 2Bs and 2BC horizons have hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. They are very gravelly sandy loam or very gravelly loam. They have 35 to 60 percent rock fragments by volume. Reaction is very strongly acid or strongly acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly sandy loam, very gravelly loamy sand, extremely gravelly sandy loam, or extremely gravelly loamy sand. It has 50 to 80 percent rock fragments by volume.

Kanaskat Series

The Kanaskat series consists of very deep, well drained soils formed in a mixture of volcanic ash, colluvium, and material weathered from extrusive igneous rocks or tuff and breccia. These soils are on back slopes in the foothills. Slopes are 0 to 65 percent. Elevation is 1,000 to 1,700 feet. The average annual precipitation is 50 to 80 inches, and the mean annual air temperature is about 47 degrees F. The frost-free period is 145 to 165 days.

These soils are loamy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Kanaskat gravelly sandy loam, 30 to 65 percent slopes, in King County, about 5 miles east of Palmer Junction, 200 feet east of Forest Service Road 5510, about 1,375 feet east and 1,060 feet south of the northwest corner of sec. 27, T. 21 N., R. 8 E.

Oi—2 inches to 1 inch; needles, leaves, and twigs; abrupt smooth boundary.

Oa—1 inch to 0; black (10YR 2/1), decomposed forest litter; abrupt smooth boundary.

A—0 to 11 inches; grayish brown (10YR 5/2) gravelly sandy loam (volcanic ash and cinders), pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; weakly smeary; many very fine, fine, and medium and common coarse roots; about 20 percent pebbles, including weathered, hard cinders; strongly acid; abrupt wavy boundary.

2Bs—11 to 23 inches; dark yellowish brown (10YR 4/4) and strong brown (7.5YR 4/6) extremely gravelly loam, very pale brown (10YR 7/3) and reddish yellow (7.5YR 6/6) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and fine and few medium roots; about 60 percent pebbles and 10 percent cobbles; moderately acid; clear smooth boundary.

2BC—23 to 38 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, very pale brown (10YR 7/3) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common fine and few very fine and medium roots; about 50 percent pebbles and 10 percent cobbles; moderately acid; gradual smooth boundary.

2C—38 to 60 inches; light olive brown (2.5Y 5/4) extremely gravelly coarse sandy loam, light gray (2.5Y 7/2) dry; massive; hard, firm, slightly sticky and nonplastic; weakly smeary; few fine roots; about 60 percent pebbles and 10 percent cobbles; moderately acid.

The depth to paralithic contact is 55 to 72 inches. The particle-size control section ranges from 35 to 75 percent rock fragments by volume. Reaction is moderately acid or strongly acid throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry.

The 2Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist. It is sandy loam or loam in the fine-earth fraction. It has 30 to 70 percent rock fragments and 0 to 10 percent hard cinders.

The 2BC horizon has value of 4 or 5 when moist and 6 or 7 when dry. It is sandy loam or loam in the fine-earth fraction. It has 40 to 60 percent pebble- and cobble-sized rock fragments.

The 2C horizon has hue of 2.5Y or 10YR, value of 6 or 7 when dry, and chroma of 4 to 6 when moist and 2 to 6 when dry. It is sandy loam or coarse sandy loam in the fine-earth fraction. It has 45 to 70 percent rock fragments.

Kapowsin Series

The Kapowsin series consists of moderately well drained soils formed in dense glacial till. These soils are

moderately deep to ortstein. They are on glacial till plains. Slopes are 6 to 65 percent. Elevation is 50 to 800 feet. The average annual precipitation is 35 to 50 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-loamy, mixed, mesic, ortstein Aquic Haplorthods.

Typical pedon of Kapowsin gravelly loam, 15 to 30 percent slopes, in Pierce County, about 4 miles southeast of Orting, 2,400 feet south and 1,600 feet east of the northwest corner of sec. 11, T. 18 N., R. 5 E.

Oa—2 inches to 0.5 inch; undecomposed needles, leaves, and twigs.
Oi—0.5 inch to 0; decomposed organic mat.
A—0 to 9 inches; very dark grayish brown (10YR 3/2) gravelly loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many fine irregular pores; about 25 percent pebbles and 5 percent cobbles; moderately acid; clear smooth boundary.
Bs1—9 to 24 inches; dark brown (10YR 4/3) gravelly loam, pale brown (10YR 6/3) dry; few fine prominent mottles, reddish brown (5YR 4/4) moist and dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine tubular pores; about 20 percent pebbles and 10 percent cobbles; moderately acid; gradual smooth boundary.
Bs2—24 to 37 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam, light yellowish brown (10YR 6/4) dry; few fine prominent mottles, reddish brown (5YR 4/4) moist and dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine tubular pores; about 20 percent pebbles and 10 percent cobbles; moderately acid; abrupt smooth boundary.
Bsm—37 to 60 inches; brown (10YR 5/3) ortstein that crushes to gravelly sandy loam, very pale brown (10YR 7/3) dry; massive; very hard, very firm, nonsticky and nonplastic; few fine tubular pores; about 25 percent pebbles; moderately acid.

The depth to ortstein ranges from 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 20 to 35 percent. It includes 0 to 10 percent cobbles.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam, gravelly silt loam, or gravelly sandy loam.

The Bsm horizon is ortstein that crushes to gravelly loam or gravelly sandy loam. It has hue of 10YR or 2.5Y, value of 4 or 5 when moist, and chroma of 3 or 4 when moist and dry.

Kindy Series

The Kindy series consists of moderately well drained soils formed in a mixture of volcanic ash and colluvium over dense glacial till. These soils are moderately deep to ortstein. They are on glacially modified mountain back slopes and plateaus. Slopes are 0 to 65 percent. Elevation is 1,800 to 2,700 feet. The average annual precipitation is 75 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 95 to 115 days.

These soils are loamy-skeletal, mixed, ortstein Typic Cryorthods.

Typical pedon of Kindy gravelly loam, 30 to 65 percent slopes, in King County, about 2.5 miles west of Lost Lake, 1,200 feet west and 2,400 feet south of the northeast corner of sec. 1, T. 21 N., R. 10 E.

Oi—2 inches to 0; decomposed organic mat.
E—0 to 4 inches; brown (7.5YR 5/2) sandy loam, pinkish gray (7.5YR 7/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many fine irregular pores; about 10 percent pebbles; strongly acid; abrupt wavy boundary.
Bs1—4 to 10 inches; dark reddish brown (5YR 3/3) and yellowish red (5YR 4/6) gravelly silt loam, reddish brown (5YR 4/3) and yellowish red (5YR 5/6) dry; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 30 percent pebbles; strongly acid; abrupt wavy boundary.
Bs2—10 to 14 inches; dark brown (7.5YR 4/4) very gravelly loam, brown (7.5YR 5/4) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many very fine irregular pores; about 40 percent pebbles and 10 percent cobbles; strongly acid; clear wavy boundary.
Bs3—14 to 23 inches; dark yellowish brown (10YR 4/6)

very gravelly loam, yellowish brown (10YR 5/6) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine, fine, and medium roots; many very fine irregular pores; about 40 percent pebbles and 10 percent cobbles; strongly acid; clear smooth boundary.

BC—23 to 32 inches; brown (10YR 5/3) and strong brown (7.5YR 5/6) very gravelly sandy loam, pale brown (10YR 6/3) and reddish yellow (7.5YR 6/6) dry; moderate medium subangular blocky structure; hard, very firm, slightly sticky and nonplastic; weakly smeary; few fine roots; many very fine irregular pores; about 50 percent pebbles and 10 percent cobbles; strongly acid; abrupt wavy boundary.

2Bsm—32 to 40 inches; dark grayish brown (2.5Y 4/2) ortstein that crushes to very gravelly sandy loam, grayish brown (2.5Y 5/2) dry; massive; extremely hard, extremely firm, slightly sticky and nonplastic; about 50 percent pebbles; moderately acid.

The depth to ortstein ranges from 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 35 to 60 percent. It includes 0 to 10 percent pebbles.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 4 to 6 when moist and dry. It is gravelly loam, gravelly silt loam, very gravelly loam, or very gravelly silt loam.

The BC horizon has hue of 7.5YR to 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

The 2Bsm horizon is ortstein that crushes to very gravelly loam or very gravelly sandy loam. It has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry.

Klaber Series

The Klaber series consists of very deep, poorly drained soils formed in lacustrine sediments. These soils are on terraces. Slopes are 0 to 8 percent. Elevation is 100 to 1,000 feet. The average annual precipitation is 50 to 60 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 165 to 185 days.

These soils are fine, mixed, mesic Typic Glossaqualfs.

Typical pedon of Klaber silt loam, 0 to 8 percent slopes, in Pierce County, about 1 mile north of Ohop, 1,300 feet north and 1,700 feet west of the southeast corner of sec. 17, T. 17 N., R. 5 E.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; strong medium and coarse granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine irregular pores; very strongly acid; abrupt smooth boundary.

AEg—3 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 6/1) dry; strong medium granular structure; very hard, firm, slightly sticky and slightly plastic; common fine and few medium roots; many fine irregular pores; very strongly acid; abrupt smooth boundary.

E/Bg—11 to 22 inches; light brownish gray (2.5Y 6/2) silt loam, light gray (10YR 7/2) dry; common medium prominent mottles, strong brown (7.5YR 5/8) moist and dry; moderate medium subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and fine tubular pores; very strongly acid; clear smooth boundary.

Btg1—22 to 36 inches; grayish brown (10YR 5/2) silty clay, light gray (2.5Y 7/2) dry; common medium prominent mottles, strong brown (7.5YR 5/6) moist and dry; moderate medium and coarse angular blocky structure; extremely hard, very firm, sticky and plastic; few fine roots; many fine and medium tubular pores; many thin and moderately thick clay films on faces of peds; strongly acid; clear smooth boundary.

Btg2—36 to 60 inches; gray (5Y 6/1) silty clay, white (5Y 8/1) dry; massive in place but parting to moderate thick plates when removed; extremely hard, extremely firm, sticky and plastic; common thin clay films on faces of peds in the upper part; strongly acid.

The content of clay in the particle-size control section ranges from 35 to 42 percent. The thickness of the solum is 15 to 40 inches.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry. The E/Bg horizon has hue of 10YR or 2.5Y and value of 4 to 6 when moist and 6 or 7 when dry. It is silt loam or silty clay loam. The Btg1 horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 1 or 2 when moist and dry. It is silty clay or clay.

Klapatche Series

The Klapatche series consists of well drained soils formed in a mixture of volcanic ash and pumice over colluvium derived from granitic and metamorphic rocks. These soils are moderately deep to bedrock. They are on glacially modified mountain ridge crests and back slopes. Slopes are 8 to 90 percent. Elevation is 2,200 to 4,000 feet. The average annual precipitation is 70 to 110 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 110 to 130 days.

These soils are sandy-skeletal, mixed Haplic Cryohumods.

Typical pedon of Klapatche loamy sand, 30 to 65 percent slopes, in King County, about 7 miles east of Chester Morse Lake, 500 feet south and 1,400 feet west of the northeast corner of sec. 22, T. 22 N., R. 10 E.

Oi—2 to 1.5 inches; loose forest litter, including needles, twigs, bark, and moss.

Oa—1.5 inches to 0; black (10YR 2/1), decomposed forest litter bound by common fine and very fine roots; abrupt smooth boundary.

E—0 to 3 inches; pinkish gray (7.5YR 6/2) loamy sand (volcanic ash and pumice), light gray (N 7/0) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many fine interstitial pores; about 5 percent pebbles; very strongly acid; abrupt irregular boundary.

B&E—3 to 8 inches; variegated dark reddish brown (5YR 3/3), dark brown (7.5YR 4/4), and light gray (10YR 7/1) loamy sand (volcanic ash and pumice), variegated reddish brown (5YR 4/4), reddish yellow (7.5YR 6/6), and light gray (10YR 7/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, common medium, and few coarse roots; many fine interstitial pores; about 10 percent pebbles and hard cinders; moderately acid; abrupt wavy boundary.

Bhs—8 to 12 inches; yellowish red (5YR 5/6) and dark reddish brown (2.5YR 3/4) very gravelly sandy loam, reddish yellow (7.5YR 6/6) dry; strong medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; weakly smeary; common fine and few medium roots; common fine random tubular pores; about 40 percent pebbles and hard cinders; moderately acid; clear wavy boundary.

2Bs—12 to 20 inches; strong brown (7.5YR 5/6) very gravelly loamy sand, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine random tubular pores; about 10 percent cobbles and 35 percent pebbles; moderately acid; clear smooth boundary.

2C—20 to 31 inches; very pale brown (10YR 7/4) extremely cobbly sand, light gray (10YR 7/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; many fine and medium interstitial pores; about 25 percent pebbles and 40 percent cobbles; strongly acid; gradual smooth boundary.

2Cr—31 to 38 inches; light gray (10YR 7/1), highly weathered granodiorite, pale yellow (2.5Y 7/4) dry; can be cut by a spade with difficulty and breaks to very gravelly coarse sand; about 50 percent hard gravel and 10 percent hard cobbles; moderately acid.

2R—38 inches; hard granodiorite.

The depth to paralithic contact is 20 to 40 inches. Hard, consolidated bedrock is at a depth of about 30 to 40 inches. The bedrock is granitic rock or metamorphic rock, mainly slate and phyllite. The content of hard rock fragments, including hard cinders, in the particle-size control section ranges from 35 to 70 percent by volume.

The E horizon has hue of 10YR or 7.5YR or is neutral in hue. It has value of 3 to 7 when moist and 6 to 8 when dry and chroma of 0 to 2 when moist and dry. Reaction is moderately acid to very strongly acid. The B&E horizon has colors similar to those of the Bhs and E horizons.

The Bhs horizon has hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It has as much as 35 percent coarse volcanic ash and pumice by volume. It is loamy sand, sandy loam, or silt loam in the fine-earth fraction. It has 15 to 50 percent pebbles and hard cinders. Most of the pebbles in this horizon are less than 5 millimeters in diameter. Reaction is moderately acid or strongly acid.

The 2Bs horizon has value of 4 to 7 when moist and chroma of 2 to 6 when moist and dry. It is very gravelly loamy sand, gravelly sandy loam, very cobbly loamy sand, extremely gravelly sand, or very cobbly sand. It has 15 to 50 percent pebbles and 5 to 30 percent cobbles. Reaction is moderately acid or strongly acid.

The 2C horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 7 when moist and dry, and chroma of 1 to 4 when dry and moist. It is extremely cobbly sand, very cobbly sand, or extremely gravelly sand. It has 40 to 70 percent rock fragments. Reaction is moderately acid or strongly acid.

Klaus Series

The Klaus series consists of moderately deep, well drained soils formed in a mixture of volcanic ash and alluvium over glacial outwash. These soils are on terraces and terrace escarpments. Slopes are 0 to 65 percent. Elevation is 700 to 1,400 feet. The average annual precipitation is 80 to 100 inches, and the mean annual temperature is about 50 degrees F. The frost-free period is 145 to 165 days.

These soils are sandy-skeletal, mixed, mesic, ortstein Typic Haplorthods.

Typical pedon of Klaus sandy loam, 0 to 8 percent slopes, in King County, about 3 miles east of North Bend, 500 feet east and 1,300 feet north of the southwest corner of sec. 7, T. 23 N., R. 9 E.

Oi—2.5 to 1.5 inches; undecomposed forest litter and moss; abrupt smooth boundary.

Oa—1.5 inches to 0; black (10YR 2/1), soft, decomposed litter and moss bound by roots; abrupt smooth boundary.

E—0 to 2 inches; grayish brown (2.5Y 5/2) loamy sand (volcanic ash), gray (N 6/0) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; many very fine and fine discontinuous pores; about 10 percent pebbles and 10 percent pumiceous ash 2 millimeters or less in diameter; strongly acid; abrupt smooth boundary.

Bhs—2 to 7 inches; dark reddish brown (5YR 3/3) sandy loam, brown (7.5YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; common fine and few medium and coarse roots; many very fine and fine discontinuous pores; about 10 percent pebbles and 10 percent pumiceous ash 2 millimeters or less in diameter; strongly acid; abrupt smooth boundary.

Bs—7 to 16 inches; dark brown (7.5YR 3/4) gravelly sandy loam, yellowish brown (10YR 5/6) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium roots; many very fine and fine discontinuous pores; about 20 percent pebbles and 5 percent cobbles; strongly acid; abrupt smooth boundary.

2BC—16 to 28 inches; brown (10YR 4/3) very gravelly sand, light brownish gray (2.5Y 6/2) dry; single grain; loose; common fine and medium roots; many very fine and fine discontinuous pores; 50 percent pebbles and 10 percent cobbles; moderately acid; clear smooth boundary.

2Bsm—28 to 43 inches; brown (10YR 4/3) extremely gravelly sand, light yellowish brown (2.5Y 6/4) dry; massive; extremely hard, extremely firm, nonsticky and nonplastic; weakly cemented; about 60 percent pebbles, 10 percent cobbles, and 10 percent stones; moderately acid; gradual smooth boundary.

2C—43 to 60 inches; brown (10YR 4/3) extremely gravelly sand, light yellowish brown (2.5Y 6/4) dry; single grain; loose; about 60 percent pebbles, 10 percent cobbles, and 10 percent stones; moderately acid.

Depth to the 2BC horizon is 12 to 30 inches. Depth to the iron-cemented 2Bsm horizon ranges from 20 to 40 inches.

The E horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 3 to 5 when moist and 4 to 6 when dry and chroma of 2 to 4 when moist and 0 to 3 when dry. It has 10 to 45 percent pumice or pumiceous volcanic ash and 10 to 15 percent pebbles. Reaction is very strongly acid or strongly acid.

The Bhs and Bs horizons have hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and 4 to 6 when dry. They have 10 to 45 percent pumiceous ash, 10 to 20 percent other volcanic ash, 10 to 30 percent pebbles, and 0 to 5 percent cobbles. Reaction is very strongly acid or strongly acid.

The 2BC horizon has hue of 10YR, 2.5Y, or 7.5YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 2 to 6 when moist and dry. It is very gravelly loamy sand, very gravelly sand, or extremely gravelly sand. It has 35 to 60 percent pebbles, 5 to 20 percent cobbles, and 0 to 10 percent stones. Reaction is strongly acid or moderately acid.

The 2Bsm and 2C horizons have colors and textures similar to those of the 2BC horizon. The 2Bsm horizon is weakly cemented with iron and extremely hard to break when in place. When removed, it can be easily broken by hand.

Larrupin Series

The Larrupin series consists of deep and very deep, well drained soils formed in volcanic ash and pumice over volcanic mudflow or over andesitic block-and-ash flow and dense lahar. These soils are on valley bottoms and on the adjacent mountain back slopes. Slopes are 3 to 65 percent slopes. Elevation is 1,700 to 2,800 feet. The average annual precipitation is 60 to 90 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Larrupin loamy sand, 30 to 65 percent slopes, in Pierce County, about 1 mile south of Old Baldy Mountain, 150 feet north of Forest Service Road 1811, about 2,000 feet east and 3,700 feet south of the northwest corner of sec. 34, T. 18 N., R. 7 E.

Oi—7 to 5 inches; needles, twigs, and moss.
Oa—5 inches to 0; dark gray (N 4/0), decomposed organic material; few fine, medium, and coarse roots.
A—0 to 6 inches; dark brown (10YR 4/3) loamy sand (65 percent volcanic ash and pumice), pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; about 10 percent subrounded and rounded pebbles; slightly acid; clear wavy boundary.
2Bs—6 to 24 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam (30 percent volcanic ash and pumice), light yellowish brown (10YR 6/4) dry; single grain; loose; many fine and few medium and coarse roots; about 25 percent subrounded and rounded pebbles; slightly acid; clear smooth boundary.
2BC—24 to 35 inches; dark yellowish brown (10YR 4/6) very gravelly sandy loam, brownish yellow (10YR 6/6) dry; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few fine and medium roots; about 30 percent pebbles and 10 percent cobbles; slightly acid; clear irregular boundary.
2C—35 to 60 inches; yellowish brown (10YR 5/6) very gravelly sandy loam, yellow (10YR 7/6) dry; single grain; loose; about 40 percent pebbles and 10 percent cobbles; slightly acid.

In some areas dense lahar material is at a depth of 40 to 60 inches. The thickness of the solum is 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 35 to 50 percent by volume.

The A horizon has value of 3 or 4 when moist and 5 or 6 when dry and chroma of 2 or 3 when moist and dry.

The 2Bs horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry. It is sandy loam or loamy sand in the fine-earth fraction. It has 10 to 35 percent coarse fragments by volume.

The 2BC horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 4 to 6 when moist and dry. It has 30 to 45 percent pebbles and 5 to 15 percent cobbles by volume.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 6 when moist and dry. It is sandy loam or loamy sand in the fine-earth fraction. It has 35 to 60 percent coarse fragments.

Lemolo Series

The Lemolo series consists of very deep, poorly drained soils formed in the Osceola mudflow. These soils are on terraces. Slopes are 0 to 8 percent. Elevation is 750 to 1,600 feet. The average annual precipitation is 50 to 60 inches, and the mean annual air temperature is about 48 degrees F. The frost-free period is 170 to 180 days.

These soils are loamy-skeletal, mixed, nonacid, mesic Typic Humaquepts.

Typical pedon of Lemolo silt loam, 0 to 8 percent slopes, in King County, about 5 miles southeast of Enumclaw, 2,400 feet north and 1,050 feet west of the southeast corner of sec. 3, T. 19 N., R. 7 E.

Oi—6 to 5 inches; moss and undecomposed needles and twigs; abrupt smooth boundary.
Oa—5 inches to 0; black (10YR 2/1), well decomposed organic material, very dark brown (10YR 2/2) after rubbing; many very fine, fine, medium, and coarse roots; extremely acid; clear smooth boundary.
A—0 to 5 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; very strongly acid; clear smooth boundary.
Bg—5 to 17 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; soft, friable, slightly sticky and plastic; few fine and medium roots; about 15 percent pebbles; very strongly acid; abrupt irregular boundary.
2Cg1—17 to 34 inches; grayish brown (10YR 5/2) very gravelly sandy clay loam, light gray (10YR 7/2) dry; many large prominent dark brown (7.5YR 3/4), strong brown (7.5YR 4/6), and dark reddish brown (5YR 3/4) mottles; massive; slightly hard, firm, slightly sticky and slightly plastic; about 50 percent pebbles and 10 percent cobbles; moderately acid; clear smooth boundary.
2Cg2—34 to 60 inches; gray (10YR 5/1) very gravelly sandy clay loam, light gray (10YR 7/2) dry; common medium prominent dark brown (7.5YR 4/4) and strong brown (7.5YR 5/8) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; about 50 percent pebbles and 10 percent cobbles; moderately acid.

Depth to the 2Cg horizon is 16 to 25 inches. The content of coarse fragments in the particle-size control section ranges from 50 to 70 percent by volume.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 1 or 2 when moist and dry. It is loam or silt loam in the lower part. Reaction is very strongly acid or strongly acid.

The 2Cg horizon has hue of 10YR or 2.5YR, value of 5 or 6 when moist, and chroma of 1 or 2 when moist and dry. It is very gravelly or extremely gravelly sandy loam or very gravelly or extremely gravelly sandy clay loam. Reaction is moderately acid or slightly acid.

Littlejohn Series

The Littlejohn series consists of well drained soils formed in a mixture of volcanic ash and pumice over residuum and colluvium derived from extrusive igneous rocks. These soils are moderately deep to bedrock. They are on mountain back slopes and ridges. Slopes are 8 to 90 percent. Elevation is 1,700 to 2,800 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 150 to 170 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Littlejohn gravelly sandy loam, 8 to 30 percent slopes, in Pierce County, about 5 miles east of Carbonado, 135 feet north and 800 feet east of the southwest corner of sec. 5, T. 18 N., R. 7 E.

Oi—2 inches to 1 inch; undecomposed forest litter and moss; abrupt smooth boundary.

Oa—1 inch to 0; black (10YR 2/1), decomposed forest litter; abrupt smooth boundary.

A—0 to 11 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) dry; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium roots; about 15 percent pebbles, 5 percent cobbles, and 15 percent pumiceous ash; moderately acid; clear wavy boundary.

2Bs—11 to 17 inches; dark yellowish brown (10YR 3/4) very gravelly loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; many fine and common medium and coarse roots; about 25 percent pebbles, 10 percent cobbles, and 10 percent pumiceous ash; moderately acid; abrupt wavy boundary.

2C—17 to 30 inches; olive brown (2.5Y 4/4) very gravelly loam, light yellowish brown (2.5Y 6/4) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common fine and few medium and coarse roots; about 40 percent pebbles, 15 percent cobbles, and 5 percent stones; moderately acid; abrupt wavy boundary.

2R—30 inches; fractured andesite.

The depth to lithic contact is 25 to 40 inches. The upper 7 to 14 inches has more than 60 percent volcanic ash. In the control section, the content of rock fragments is 35 to 60 percent and the content of pumice is 0 to 20 percent.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry. Subhorizons that have value and chroma of 3 are less than 7 inches thick. Reaction is strongly acid or moderately acid.

The 2Bs horizon has hue of 10YR or 2.5Y, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam, gravelly sandy loam, very gravelly loam, or very gravelly sandy loam. It has 10 to 50 percent gravel, 5 to 10 percent cobbles, and 10 to 35 percent volcanic ash.

The 2C horizon has hue of 10YR or 2.5Y and value of 4 or 5 when moist and 5 or 6 when dry. It is very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, or extremely gravelly loam. It has 35 to 60 percent pebbles and 10 to 20 percent cobbles.

Lynnwood Series

The Lynnwood series consists of very deep, somewhat excessively drained soils formed in glacial outwash. These soils are on outwash terraces. Slopes are 6 to 45 percent. Elevation is 50 to 500 feet. The average annual precipitation is 40 to 55 inches, and the mean annual air temperature is about 49 degrees F. The frost-free period is 180 to 200 days.

These soils are sandy, mixed, mesic Entic Haplorthods.

Typical pedon of Lynnwood loamy fine sand, 6 to 15 percent slopes, in Pierce County, about 3 miles south of Buckley, 1,900 feet north and 1,500 feet east of the southwest corner of sec. 22, T. 19 N., R. 6 E.

Oi—3 to 2 inches; undecomposed needles, leaves, and twigs.

Oa—2 inches to 0; decomposed organic mat.

A—0 to 3 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 5/3) dry; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and

common medium and coarse roots; many very fine irregular pores; moderately acid; abrupt smooth boundary.

Bs1—3 to 11 inches; dark yellowish brown (10YR 3/4) loamy fine sand, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; many fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

Bs2—11 to 21 inches; dark yellowish brown (10YR 3/4) loamy fine sand, yellowish brown (10YR 5/4) dry; massive; loose; common very fine, fine, and medium and few coarse roots; many fine irregular pores; slightly acid; clear smooth boundary.

BC—21 to 26 inches; olive brown (2.5Y 4/4) fine sand, pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) dry; loose; few fine roots; many fine irregular pores; moderately acid; gradual smooth boundary.

C1—26 to 33 inches; olive (5Y 4/4) fine sand, pale olive (5Y 6/3) dry; loose; many fine irregular pores; moderately acid; clear smooth boundary.

C2—33 to 60 inches; olive (5Y 4/3) fine sand, olive (5Y 5/3) dry; loose; many fine irregular pores; moderately acid.

The thickness of the solum is 20 to 36 inches. The content of rock fragments in the particle-size control section ranges from 0 to 10 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 to 4 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry. It is loamy fine sand or sand.

The BC and C horizons have hue of 10YR, 2.5Y, or 5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry.

Marblemount Series

The Marblemount series consists of moderately deep, well drained soils formed in a mixture of volcanic ash, glacial till, and colluvium derived from granite and low-grade metamorphic rock. These soils are on glaciated mountain back slopes. Slopes are 8 to 90 percent. Elevation is 1,700 to 2,800 feet. The average annual precipitation is 70 to 120 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 110 to 130 days.

These soils are sandy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Marblemount gravelly loamy sand, 30 to 65 percent slopes, in King County, about 4 miles northeast of Chester Morse Lake, 100 feet south and 1,600 feet west of the northeast corner of sec. 7, T. 22 N., R. 10 E.

Oa—2 inches to 0.5 inch; decomposed needles and twigs.

Oi—0.5 inch to 0; decomposed organic mat.

E—0 to 2 inches; dark grayish brown (10YR 4/2) loamy sand (volcanic ash and pumice), light gray (10YR 7/2) dry; single grain; loose; weakly smeary; common very fine, fine, and medium roots; about 5 percent pebbles and 5 percent cinders; NaF pH 11.5; strongly acid; abrupt wavy boundary.

Bs1—2 to 5 inches; variegated dark reddish brown (5YR 3/4) and yellowish red (5YR 5/8) gravelly loamy sand (volcanic ash and pumice), brown (7.5YR 5/4) and reddish yellow (7.5YR 6/6) dry; single grain; loose; weakly smeary; common very fine and fine roots; about 10 percent pebbles and 5 percent cinders; NaF pH 12.0; moderately acid; gradual wavy boundary.

Bs2—5 to 22 inches; variegated reddish brown (5YR 4/4) and strong brown (7.5YR 5/8) very gravelly loamy sand, brown (7.5YR 5/4) and reddish yellow (7.5YR 6/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 30 percent pebbles and 5 percent cobbles; NaF pH 12.0; moderately acid; gradual wavy boundary.

BC—22 to 35 inches; brown (7.5YR 4/4) extremely gravelly loamy sand, light brown (7.5YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; about 45 percent pebbles and 20 percent cobbles; NaF pH 12.0; moderately acid; abrupt wavy boundary.

Cr—35 inches; fractured granodiorite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the particle-size control section is 35 to 60 percent. It includes 0 to 10 percent cinders and 0 to 10 percent cobbles.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 4 to 8 when moist and dry. It is loamy sand, gravelly loamy sand, or very gravelly loamy sand.

The BC horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is very gravelly

loamy sand, extremely gravelly loamy sand, or extremely gravelly sand.

Mashel Series

The Mashel series consists of very deep, moderately well drained soils formed in glacial till. These soils are on back slopes in the foothills. Slopes are 5 to 65 percent. Elevation is 700 to 1,800 feet. The average annual precipitation is 50 to 60 inches, and the mean annual air temperature is about 49 degrees F. The frost-free period is 180 to 200 days.

These soils are fine, halloysitic, mesic Ultic Haploxeralfs.

Typical pedon of Mashel silt loam, 5 to 30 percent slopes, in Pierce County, about 4 miles east of Lake Kapowsin, 700 feet north and 700 feet west of the southeast corner of sec. 11, T. 17 N., R. 5 E.

Oi—3 inches to 0; undecomposed organic mat; few very fine, fine, and medium roots.

A—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; moderate medium granular structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

BA—7 to 13 inches; brown (10YR 5/3) silt loam, pale brown (10YR 6/3) dry; strong medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and fine and few medium and coarse roots; many very fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

Bt1—13 to 22 inches; brown (10YR 5/3) silty clay loam, pale yellow (2.5Y 7/4) dry; common coarse distinct dark yellowish brown (10YR 4/4) mottles, brownish yellow (10YR 6/6) dry; strong medium subangular blocky structure; hard, very firm, sticky and plastic; common very fine and fine and few coarse roots; many very fine irregular pores; about 5 percent pebbles; few thick clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—22 to 30 inches; brown (10YR 5/3) silty clay, light gray (2.5Y 7/2) dry; many coarse distinct strong brown (7.5YR 5/6) mottles; strong medium subangular blocky structure; hard, firm, sticky and plastic; many very fine irregular pores; about 10 percent pebbles; few thick clay films on faces of peds; moderately acid; clear smooth boundary.

BCt1—30 to 48 inches; grayish brown (10YR 5/2) silty clay, very pale brown (10YR 7/4) dry; common medium distinct yellowish brown (10YR 5/6) mottles, strong brown (7.5YR 5/6) dry; strong medium subangular blocky structure; hard, firm, sticky and plastic; common very fine irregular pores; about 10 percent pebbles; few thick clay films on faces of peds; moderately acid; clear smooth boundary.

BCt2—48 to 60 inches; grayish brown (10YR 5/2) silty clay, light gray (10YR 7/2) dry; common medium distinct yellowish brown (10YR 5/6) mottles, strong brown (7.5YR 5/8) dry; massive; hard, firm, sticky and plastic; common very fine irregular pores; about 10 percent pebbles; few thick clay films on faces of peds; moderately acid.

In the particle-size control section, the content of clay is 35 to 45 percent and the content of rock fragments is 5 to 15 percent.

The A horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 2 or 3 when moist and dry.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. It is silty clay loam or silty clay.

The BCt horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is silty clay loam or silty clay.

Melakwa Series

The Melakwa series consists of moderately deep, well drained soils formed in a mixture of volcanic ash and pumice over colluvium derived from andesite or breccia and tuff. These soils are on glacially modified mountain back slopes and toe slopes. Slopes are 8 to 90 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 90 to 130 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplohumods.

Typical pedon of Melakwa sandy loam, 30 to 65 percent slopes, in King County, about 0.5 mile south of Chester Morse Lake, along Little Mountain Road, in the Cedar River watershed, 2,150 feet west and 2,950 feet north of the southeast corner of sec. 20, T. 22 N., R. 9 E.

Oi—3 inches to 1 inch; moss, needles, and twigs.

Oa—1 inch to 0; decomposed forest litter.

E—0 to 3 inches; reddish gray (5YR 5/2) loamy sand (volcanic ash and pumice), light gray (5YR 7/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; nonsmeary; many

very fine and fine and few medium and coarse roots; about 5 percent subangular pebbles; NaF pH less than 9.2; very strongly acid; abrupt wavy boundary.

Bhs—3 to 7 inches; dark reddish brown (5YR 3/4) sandy loam (volcanic ash and pumice), yellowish red (5YR 4/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and few medium and coarse roots; about 10 percent subangular pebbles; NaF pH 12.0+; very strongly acid; abrupt wavy boundary.

2Bs—7 to 13 inches; dark brown (7.5YR 4/4) very gravelly sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and few medium and coarse roots; about 40 percent pebbles and 10 percent cobbles; NaF pH 12.0+; strongly acid; clear wavy boundary.

2BCs—13 to 22 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; few very fine interstitial pores; about 40 percent pebbles and 20 percent cobbles; NaF pH 12.0+; strongly acid; gradual wavy boundary.

2BC—22 to 31 inches; olive brown (2.5Y 4/4) very gravelly loam, light yellowish brown (2.5Y 6/4) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few coarse roots; few very fine interstitial pores; about 40 percent pebbles and 20 percent cobbles; NaF pH 11.0; strongly acid; abrupt wavy boundary.

2C—31 to 37 inches; light olive brown (2.5Y 5/4) extremely gravelly loam, pale yellow (2.5Y 7/4) dry; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; weakly smeary; few very fine interstitial pores; about 50 percent pebbles and 20 percent cobbles; NaF pH 11.5; strongly acid; abrupt wavy boundary.

2R—37 inches; hard fractured andesite.

The depth to lithic contact is 20 to 40 inches. The content of rock fragments, including hard cinders, in the control section is 35 to 70 percent by volume.

The E horizon has hue of 5YR or 7.5YR or is neutral in hue. It has value of 4 to 6 when moist and 5 to 7 when dry and chroma of 0 to 2 when moist and dry. The content of rock fragments, including hard cinders, is 0 to 10 percent by volume.

The Bhs horizon has hue of 5YR or 7.5YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 2 to 4 when moist and 4 to 6 when dry. It has 10 to 30 percent rock fragments, including hard cinders, by volume.

The 2Bs horizon has hue of 5YR or 7.5YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is very gravelly sandy loam or very gravelly loam. It has 35 to 60 percent rock fragments by volume.

The 2BCs horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 4 to 6 when moist and dry. It is very gravelly sandy loam or very gravelly loam. The content of rock fragments is 35 to 60 percent by volume.

The 2BC and 2C horizons have hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. They are loam or sandy loam in the fine-earth fraction. They have 50 to 80 percent rock fragments by volume.

Mowich Series

The Mowich series consists of very deep, somewhat poorly drained soils formed in volcanic ash over glaciolacustrine sediments. These soils are on proglacial lake plains. Slopes are 0 to 15 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 55 to 75 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 150 to 170 days.

These soils are loamy over clayey, mixed, frigid Aquic Haplorthods.

Typical pedon of Mowich silt loam, 0 to 15 percent slopes, in Pierce County, about 3.5 miles southeast of Ohop, 150 feet south of St. Regis Paper Company Road 0-6011, about 1,600 feet east and 800 feet south of the northwest corner of sec. 35, T. 17 N., R. 5 E.

Oi—8 to 5 inches; needles, twigs, leaves, and moss.

Oa—5 inches to 0; decomposed forest litter; many very fine, fine, and medium roots; abrupt smooth boundary.

A—0 to 7 inches; dark brown (7.5YR 3/2) silt loam, brown (7.5YR 5/2) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; many very fine, fine, medium, and coarse roots; common very fine tubular pores; very strongly acid; abrupt wavy boundary.

Bs1—7 to 10 inches; strong brown (7.5YR 5/6) silt loam, reddish yellow (7.5YR 6/6) dry; reddish brown (5YR 4/4) iron oxide coatings on 20 percent of the ped faces; moderate fine and medium subangular

blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; common very fine and fine roots; common very fine tubular pores; very strongly acid; clear wavy boundary.

Bs2—10 to 26 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; common fine distinct yellowish red (5YR 4/6) and few fine distinct light brownish gray (10YR 6/2) mottles; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; few very fine and fine roots; many very fine tubular pores; very strongly acid; clear smooth boundary.

2Cg—26 to 60 inches; light brownish gray (2.5Y 6/2) silty clay, light gray (2.5Y 7/2) dry; many fine and medium prominent yellowish red (5YR 5/8) mottles; massive; very hard, firm, sticky and plastic; few very fine tubular pores; very strongly acid.

The content of coarse fragments in the control section is 0 to 15 percent by volume. Reaction is very strongly acid or strongly acid throughout the profile.

The A horizon has hue of 7.5YR or 10YR when moist and dry, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bs1 horizon has hue of 5YR or 7.5YR when moist and dry, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry.

The Bs2 horizon has value of 4 to 6 when moist and 5 to 7 when dry and chroma of 2 to 4 when moist and dry. It is silt loam or silty clay loam.

The 2Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6 when moist and 6 to 8 when dry, and chroma of 1 or 2 when moist and dry. It is silty clay or clay.

Mukilteo Series

The Mukilteo series consists of very deep, very poorly drained soils formed in herbaceous and woody organic material. These soils are in bogs. Slopes are 0 to 1 percent. Elevation is 600 to 1,000 feet. The average annual precipitation is 40 to 55 inches, and the mean annual temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are dysic, mesic Typic Medihemists.

Typical pedon of Mukilteo peat, 0 to 1 percent slopes, in King County, about 2 miles northwest of Solleck, about 500 feet east and 2,500 feet north of the southwest corner of sec. 15, T. 22 N., R. 7 E.

Oi—0 to 10 inches; dark brown (7.5YR 3/4) peat, dark brown (7.5YR 4/4) dry; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine irregular pores; about 90 percent fiber before rubbing and 40 percent after rubbing; very strongly acid; clear smooth boundary.

Oe1—10 to 40 inches; dark brown (7.5YR 3/4) hemic material, dark brown (7.5YR 4/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine irregular pores; about 90 percent fiber before rubbing and 40 percent after rubbing; very strongly acid; clear smooth boundary.

Oe2—40 to 60 inches; dark reddish brown (5YR 3/3) hemic material, reddish brown (5YR 4/3) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine irregular pores; about 80 percent fiber before rubbing and 45 percent after rubbing; very strongly acid.

The content of fiber in the control section is 70 to 90 percent before rubbing and 40 to 50 percent after rubbing. The surface tier has hue of 5YR or 7.5YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry. The subsurface tier has hue of 5YR or 7.5YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry.

Nagrom Series

The Nagrom series consists of well drained soils formed in volcanic ash and pumice over residuum and colluvium derived from extrusive igneous rocks or breccia and tuff. These soils are moderately deep to fractured bedrock. They are on ridge crests and mountain back slopes. Slopes are 8 to 90 percent. Elevation is 2,400 to 3,600 feet. The average annual precipitation is 75 to 100 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 110 to 130 days.

These soils are loamy-skeletal, mixed Haplic Cryohumods.

Typical pedon of Nagrom sandy loam, 8 to 30 percent slopes, in King County, about 9 miles east of Enumclaw, on a spur ridge off Grass Mountain, 1,300 feet west and 400 feet south of the northeast corner of sec. 20, T. 20 N., R. 8 E.

Oi—1.5 inches to 0.5 inch; leaves, needles, twigs, and moss; abrupt smooth boundary.

Oa—0.5 inch to 0; decomposed organic litter; abrupt smooth boundary.

E—0 to 2 inches; dark grayish brown (10YR 4/2) loamy sand (volcanic ash and pumice), light brownish gray

(10YR 6/2) dry; single grain; loose; weakly smeary; many very fine and fine and common medium roots; strongly acid; abrupt wavy boundary.

Bhs—2 to 4 inches; dark reddish brown (5YR 3/2) loam (volcanic ash and pumice), dark reddish brown (5YR 3/3) dry; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; moderately smeary; common very fine, fine, medium, and coarse roots; about 5 percent pebbles; strongly acid; clear irregular boundary.

Bs—4 to 7 inches; dark reddish brown (5YR 3/4) loam, strong brown (7.5YR 5/6) dry; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; moderately smeary; common very fine, fine, medium, and coarse roots; about 10 percent pebbles; strongly acid; clear irregular boundary.

BCs—7 to 23 inches; dark yellowish brown (10YR 4/4) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate coarse subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; about 30 percent pebbles and 5 percent cobbles; moderately acid; clear smooth boundary.

2C—23 to 38 inches; yellowish brown (10YR 5/4) very gravelly loam, very pale brown (10YR 7/4) dry; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; about 40 percent pebbles and 10 percent cobbles; moderately acid; abrupt smooth boundary.

2R—38 inches; fractured andesite.

The depth to lithic contact is 20 to 40 inches. In the control section the content of rock fragments, including hard cinders, ranges from 35 to 60 percent.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry. It has 0 to 15 percent hard cinders and pebbles.

The Bhs horizon has hue of 5YR or 7.5YR, value of 3 or 4 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry. It is sandy loam, loam, gravelly sandy loam, or gravelly loam (volcanic ash and pumice). It has 0 to 30 percent pebbles and hard cinders. Reaction is very strongly acid or strongly acid.

The Bs horizon has hue of 5YR or 7.5YR, value of 3 or 4 when moist, and chroma of 4 to 6 when moist. It is sandy loam, loam, or gravelly loam. It has 10 to 35 percent pebbles and hard cinders. Reaction is very strongly acid to moderately acid.

The BCs horizon is very gravelly sandy loam or very gravelly loam. It has 30 to 50 percent pebbles and 5 to 10 percent cobbles.

The 2C horizon has hue of 2.5Y or 10YR, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 2 to 4 when moist and dry. It is very gravelly loam or very gravelly silt loam. It has 40 to 50 percent pebbles and 5 to 10 percent cobbles.

Nargar Series

The Nargar series consists of very deep, well drained soils formed in a mixture of volcanic ash and sandy alluvium over glacial outwash. These soils are on escarpments. Slopes are 0 to 70 percent. Elevation is 700 to 1,200 feet. The average annual precipitation is 50 to 75 inches, and the mean annual temperature is about 47 degrees F. The frost-free period is 150 to 170 days.

These soils are sandy, mixed, mesic Typic Haplorthods.

Typical pedon of Nargar fine sandy loam, 0 to 15 percent slopes, in King County, about 2 miles west of the Tolt-Seattle Reservoir Dam, 1,700 feet west and 1,400 feet south of the northeast corner of sec. 35, T. 26 N., R. 8 E.

Oi—1 inch to 0; decomposed organic mat.

E—0 to 2 inches; dark brown (7.5YR 4/2) fine sandy loam, pinkish gray (7.5YR 6/2) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; strongly acid; abrupt wavy boundary.

Bs1—2 to 11 inches; strong brown (7.5YR 4/6) fine sandy loam, strong brown (7.5YR 5/6) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; many very fine, fine, and medium roots; many very fine irregular pores; strongly acid; abrupt smooth boundary.

Bs2—11 to 24 inches; yellowish brown (10YR 5/6) fine sandy loam, brownish yellow (10YR 6/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many fine irregular pores; about 5 percent pebbles; slightly acid; clear wavy boundary.

2C—24 to 60 inches; olive brown (2.5Y 4/4) sand, light olive brown (2.5Y 5/4) dry; single grain; loose; many fine irregular pores; about 10 percent pebbles; slightly acid.

The thickness of the solum is 20 to 40 inches. The content of rock fragments ranges from 0 to 10 percent in the upper part of the particle-size control section and from 5 to 15 percent in the lower part.

The E horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry. Some pedons have an A horizon. This horizon has hue and chroma similar to those of the E horizon, but it has value of 2 or 3 when moist and 4 or 5 when dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is fine sandy loam or sandy loam.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. It is dominantly fine sand, sand, or gravelly sand. In some pedons, however, it is gravelly sand or very gravelly sand below a depth of 40 inches.

National Series

The National series consists of very deep, well drained soils formed in a mixture of volcanic ash and pumice over alluvium. These soils are on terraces. Slopes are 0 to 8 percent. Elevation is 1,200 to 1,800 feet. The average annual precipitation is 75 to 85 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 155 to 175 days.

These soils are cindery over medial, mesic Umbric Vitrandepts.

Typical pedon of National cindery sandy loam, 0 to 8 percent slopes, in Pierce County, about 2.5 miles east of Ashford, 1,800 feet north and 100 feet east of the southwest corner of sec. 30, T. 15 N., R. 7 E.

Oa—2 inches to 0; undecomposed forest litter.

A—0 to 10 inches; very dark grayish brown (10YR 3/2) cindery sandy loam, dark brown (10YR 4/3) dry; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; many fine irregular pores; about 30 percent pumice 2 to 5 millimeters in diameter; moderately acid; clear smooth boundary.

Bw1—10 to 21 inches; dark brown (10YR 4/3) very cindery loamy sand, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse roots; many fine irregular pores; about 40 percent pumice 2 to 5 millimeters in diameter and 2 percent pebbles; moderately acid; gradual wavy boundary.

Bw2—21 to 28 inches; dark yellowish brown (10YR 4/6) very cindery loamy sand, brownish yellow (10YR 6/6) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; many fine irregular pores; about 50 percent pumice 2 to 5 millimeters in diameter and 2 percent pebbles; moderately acid; clear smooth boundary.

2Bw3—28 to 46 inches; dark yellowish brown (10YR 4/4) loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common very fine tubular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

2C—46 to 60 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine roots; common very fine tubular pores; about 10 percent pebbles; moderately acid.

The umbric epipedon is 10 to 24 inches thick. Depth to the 2B horizon is 20 to 30 inches.

The A horizon has hue of 10YR or 7.5YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. It is very cindery sandy loam or very cindery loamy sand.

The 2Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 to 6 when moist and dry. It is loam or sandy loam.

The 2C horizon is silt loam or loam.

Neilton Series

The Neilton series consists of very deep, excessively drained soils formed in glacial outwash. These soils are on terraces. Slopes are 2 to 15 percent. Elevation is 400 to 500 feet. The average annual precipitation is 40 to 60 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 170 to 190 days.

These soils are sandy-skeletal, mixed, mesic Dystric Xerorthents.

Typical pedon of Neilton gravelly loamy sand, 2 to 15 percent slopes, in King County, about 1.5 miles southeast of North Bend, 1,500 feet south and 1,800 feet west of the northeast corner of sec. 15, T. 23 N., R. 8 E.

Oi—2 inches to 0; undecomposed needles, leaves, and twigs.

A—0 to 2 inches; very dark brown (10YR 2/2) gravelly loamy sand, dark brown (10YR 3/3) dry; weak

medium crumb structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many fine irregular pores; about 15 percent pebbles; strongly acid; clear smooth boundary.

Bs1—2 to 9 inches; dark yellowish brown (10YR 3/6) gravelly loamy sand, brownish yellow (10YR 6/6) dry; weak fine subangular blocky structure parting to single grain; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many fine irregular pores; about 15 percent pebbles; moderately acid; clear smooth boundary.

Bs2—9 to 16 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure parting to single grain; loose; many very fine, fine, medium, and coarse roots; many fine irregular pores; about 15 percent pebbles; moderately acid; clear smooth boundary.

BC—16 to 21 inches; dark brown (10YR 3/3) extremely gravelly sand, pale brown (10YR 6/3) dry; single grain; loose; many very fine and common fine roots; many fine irregular pores; about 60 percent pebbles; moderately acid; clear smooth boundary.

C—21 to 60 inches; very gravelly sand that is dominantly dark brown (10YR 4/3) but is variegated, pale brown (10YR 6/3) dry; single grain; loose; common very fine roots; many fine irregular pores; about 55 percent pebbles; moderately acid.

The thickness of the solum is 15 to 25 inches. The content of rock fragments in the control section is 40 to 60 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is dominantly gravelly loamy sand or gravelly sand. In some pedons, however, it is loamy sand or sand.

The BC and C horizons have hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. They are very gravelly or extremely gravelly sand.

Nimue Series

The Nimue series consists of very deep, well drained soils formed in a thin mantle of volcanic ash and pumice over residuum and colluvium derived from extrusive igneous rocks or from breccia and tuff. These soils are on rounded ridgetops and mountain back slopes. Slopes are 6 to 90 percent. Elevation is 3,400 to 5,000 feet. The average annual precipitation is 70 to 120 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 110 to 130 days.

These soils are loamy-skeletal, mixed Haplic Cryohumods.

Typical pedon of Nimue loamy sand, 6 to 30 percent slopes, in the Government Meadows area in King County, 2,600 feet north and 700 feet west of the southeast corner of sec. 33, T. 19 N., R. 6 E.

Oi—3 to 2.5 inches; needles, leaves, and twigs; abrupt smooth boundary.

Oa—2.5 inches to 0; black (5YR 2.5/1), decomposed forest litter; many very fine roots; abrupt wavy boundary.

E—0 to 2 inches; gray (10YR 5/1) loamy sand (volcanic ash and pumice), light gray (10YR 7/1) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; about 5 percent pebbles; very strongly acid; abrupt wavy boundary.

Bhs—2 to 5 inches; variegated dark reddish brown (5YR 3/2, 3/4) and yellowish red (5YR 5/6) loamy sand (volcanic ash and pumice), strong brown (7.5YR 4/6) dry; moderate medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many fine and medium and common coarse roots; about 10 percent pebbles; very strongly acid; abrupt irregular boundary.

Bs—5 to 10 inches; reddish brown (5YR 4/4) and strong brown (7.5YR 5/6) sandy loam (65 percent sand-sized volcanic ash), light brown (7.5YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine and few medium roots; about 12 percent pebbles; strongly acid; clear irregular boundary.

2BC—10 to 24 inches; brown (7.5YR 4/4) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium and few coarse roots; about 40 percent angular pebbles and 5 percent angular cobbles; moderately acid; gradual irregular boundary.

2C1—24 to 43 inches; dark yellowish brown (10YR 4/6) extremely gravelly silt loam, pale yellow (2.5Y 7/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; about 60 percent angular pebbles and 10 percent angular cobbles; moderately acid; diffuse smooth boundary.

2C2—43 to 60 inches; olive brown (2.5Y 4/4) extremely gravelly silt loam, light brownish gray (2.5Y 6/2) dry; weak fine subangular blocky structure; slightly hard, firm, sticky and plastic; about 65 percent angular pebbles and 10 percent angular cobbles; moderately acid.

The upper 6 to 12 inches of the solum ranges from 60 to 90 percent volcanic ash and pumice. The particle-size control section ranges from 40 to 70 percent rock fragments.

The E horizon has hue of 10YR or 7.5YR or is neutral in hue. It has value of 3 to 7 when moist and 6 to 8 when dry and chroma of 0 to 2 when moist and dry.

The Bhs horizon is 2 to 5 inches thick. It has hue of 5YR or 7.5YR, value of 3 to 5 when moist, and chroma of 2 to 6 when moist and dry. It is sandy loam, fine sandy loam, or loamy sand (volcanic ash) in the fine-earth fraction. It has 0 to 30 percent coarse fragments. Reaction is very strongly acid to moderately acid.

The Bs horizon is loam, sandy loam, silt loam, or loamy sand (volcanic ash) in the fine-earth fraction. It has 0 to 35 percent gravel. Reaction is strongly acid or moderately acid.

The 2BC horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist, and chroma of 4 to 6 when moist and dry. It is sandy loam, fine sandy loam, or loam in the fine-earth fraction. It has 35 to 70 percent coarse fragments. Reaction is slightly acid to strongly acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5 when moist, and chroma of 2 to 6 when moist and dry. It is extremely gravelly sandy loam, extremely gravelly loam, extremely gravelly silt loam, extremely stony sandy loam, or very cobbly fine sandy loam in the basalt and andesite substratum phases.

Nooksack Series

The Nooksack series consists of very deep, moderately well drained soils formed in alluvium. These soils are on flood plains and river terraces. Slopes are 0 to 2 percent. Elevation is 30 to 500 feet. The average annual precipitation is 35 to 55 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 180 to 200 days.

These soils are coarse-silty, mixed, mesic Fluventic Haploxerolls.

Typical pedon of Nooksack silt loam, 0 to 2 percent slopes, in King County, about 1.5 miles northwest of Fall City, 2,140 feet north and 1,800 feet east of the southwest corner of sec. 4, T. 24 N., R. 7 E.

Ap1—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; few fine faint dark yellowish brown (10YR 4/4) mottles; weak thin platy structure; slightly hard, very friable; many roots; slightly acid; abrupt smooth boundary.

Ap2—2 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak coarse prismatic structure; slightly hard, very friable; common roots; slightly acid; abrupt smooth boundary.

Bw—11 to 29 inches; dark grayish brown (2.5Y 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common roots; moderately acid; clear smooth boundary.

C1—29 to 42 inches; dark grayish brown (10YR 4/2) and grayish brown (2.5Y 5/2) silt loam that has thin lenses of very fine sandy loam; light brownish gray (2.5Y 6/2) dry; massive; slightly hard, very friable, slightly sticky and slightly plastic; common roots; slightly acid; clear smooth boundary.

C2—42 to 60 inches; grayish brown (2.5Y 5/2) silt loam, light brownish gray (2.5Y 6/2) dry; massive; hard, friable, sticky and plastic; common roots; moderately acid.

Reaction is slightly acid or moderately acid throughout the profile.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 2 or 3 when moist and dry. The Bw horizon has value of 4 or 5 when moist and 5 or 6 when dry and chroma of 2 to 4 when moist and dry. The C horizon has value of 4 or 5 when moist and 5 or 6 when dry and chroma of 2 to 4 when moist and dry. In some pedons it is mottled below a depth of 36 inches.

Norma Series

The Norma series consists of very deep, poorly drained soils formed in alluvium. These soils are in depressions on glacial till plains. Slopes are 0 to 3 percent. Elevation is 100 to 800 feet. The average annual precipitation is 35 to 60 inches, and the mean annual air temperature is 50 degrees F. The frost-free period is 170 to 190 days.

These soils are coarse-loamy, mixed, nonacid, mesic Mollic Haplaquepts.

Typical pedon of Norma loam, 0 to 3 percent slopes, in King County, about 3 miles northwest of the Tolt-Seattle Reservoir Dam, 800 feet east and 1,200 feet south of the northwest corner of sec. 22, T. 26 N., R. 8 E.

A—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine

granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine irregular pores; about 5 percent pebbles; slightly acid; clear wavy boundary.

Bg1—9 to 17 inches; dark grayish brown (10YR 4/2) and dark brown (10YR 4/3) gravelly loam, light brownish gray (10YR 6/2) and pale brown (10YR 6/3) dry; many medium prominent strong brown (7.5YR 4/6) mottles, strong brown (7.5YR 5/6) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very fine irregular pores; about 30 percent pebbles; slightly acid; gradual wavy boundary.

Bg2—17 to 33 inches; dark grayish brown (10YR 4/2) gravelly loam, light brownish gray (10YR 6/2) dry; common medium distinct dark yellowish brown (10YR 4/6) mottles, yellowish brown (10YR 5/6) dry; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; about 30 percent pebbles; slightly acid; clear smooth boundary.

Cg—33 to 60 inches; dark grayish brown (2.5Y 4/2) very gravelly sandy loam, light gray (5Y 7/2) dry; common fine prominent mottles, strong brown (7.5YR 4/6) moist and dry; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; many very fine irregular pores; about 50 percent pebbles; slightly acid.

In the particle-size control section, the content of clay is 5 to 15 percent and the content of rock fragments ranges from 10 to 30 percent. Individual horizons below a depth of 40 inches may have 35 to 50 percent pebbles.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 1 or 2.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 1 to 3 when moist and dry. It is loam, sandy loam, gravelly loam, or gravelly sandy loam.

The Cg horizon has hue of 2.5Y or 5Y, value of 6 or 7 when dry, and chroma of 1 or 2 when moist and dry. It is gravelly loam, gravelly sandy loam, very gravelly loam, or very gravelly sandy loam.

Oakes Series

The Oakes series consists of deep and very deep, well drained soils formed in a mixture of volcanic ash and colluvium and slope alluvium derived from glacial drift or in block-and-ash flow deposited over compact lahar. These soils are on mountain back slopes and toe slopes. Slopes are 6 to 65 percent. Elevation is 1,400 to 2,800 feet. The average annual precipitation is 65 to 75 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 120 to 160 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Oakes gravelly loam, 6 to 30 percent slopes, in King County, about 4 miles west of Cedar Falls, 100 feet south and 1,400 feet west of the northeast corner of sec. 35, T. 23 N., R. 7 E.

Oi—5 to 2 inches; undecomposed needles, twigs, and leaves.

Oa—2 inches to 0; black (10YR 2/1), decomposed organic mat.

A—0 to 2 inches; very dark brown (10YR 2/2) loam, brown (10YR 4/3) dry; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium roots; many very fine irregular pores; about 10 percent pebbles; strongly acid; abrupt wavy boundary.

Bs1—2 to 8 inches; dark reddish brown (5YR 3/4) gravelly loam, yellowish red (5YR 4/6) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine, medium, and coarse roots; many very fine irregular pores; about 15 percent pebbles and 5 percent cobbles; moderately acid; abrupt wavy boundary.

Bs2—8 to 22 inches; dark brown (7.5YR 3/4) very gravelly loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine, medium, and coarse roots; many very fine irregular pores; about 40 percent pebbles; moderately acid; clear smooth boundary.

Bs3—22 to 38 inches; dark yellowish brown (10YR 4/4) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; many very fine irregular pores; about 50 percent pebbles; moderately acid; abrupt smooth boundary.

C—38 to 60 inches; light olive brown (2.5Y 5/4) very gravelly sandy loam, light brownish gray (2.5Y 6/2) dry; massive; hard, firm, slightly sticky and slightly plastic; weakly smeary; about 55 percent pebbles; moderately acid.

The content of rock fragments in the particle-size control section is 35 to 55 percent.

The A horizon has value of 4 or 5 when dry and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 4 to 6 when moist and dry. It is dominantly very gravelly silt loam or very gravelly loam. In some pedons, however, the Bs1 horizon is gravelly loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6 when moist and 6 to 8 when dry, and chroma of 2 to 6 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

Ogarty Series

The Ogarty series consists of well drained soils formed in a mixture of volcanic ash and colluvium and residuum derived from andesite and breccia. These soils are moderately deep to bedrock. They are on back slopes in the foothills. Slopes are 8 to 90 percent. Elevation is 500 to 1,800 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 150 to 170 days.

These soils are loamy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Ogarty gravelly loam, 30 to 65 percent slopes, in Pierce County, about 5 miles south of Enumclaw, 1,800 feet south and 1,000 feet west of the northeast corner of sec. 13, T. 19 N., R. 6 E.

Oi—1.5 inches to 0.5 inch; undecomposed twigs, leaves, and needles.

Oa—0.5 inch to 0; decomposed organic mat.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 25 percent pebbles and 5 percent cobbles; moderately acid; clear wavy boundary.

Bs1—4 to 15 inches; dark brown (10YR 4/3) very gravelly fine sandy loam, pale brown (10YR 6/3) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine, fine, and medium and few coarse roots; common very fine tubular pores; about 10 percent cobbles and 45 percent pebbles; moderately acid; gradual wavy boundary.

Bs2—15 to 23 inches; dark yellowish brown (10YR 4/4) extremely gravelly fine sandy loam, light yellowish brown (10YR 6/4) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine, fine, medium, and coarse roots; common very fine tubular pores; moderately acid; clear wavy boundary.

Bs3—23 to 28 inches; dark brown (7.5YR 4/4) extremely gravelly fine sandy loam, brownish yellow (10YR 6/6) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; few very fine, fine, and medium roots; few very fine tubular pores; about 45 percent pebbles and 25 percent cobbles; moderately acid; clear wavy boundary.

C—28 to 37 inches; brown (7.5YR 5/4) extremely gravelly fine sandy loam, very pale brown (10YR 7/4) dry; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; about 90 percent pebbles and 5 percent cobbles; moderately acid; clear wavy boundary.

2R—37 inches; fractured andesite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the particle-size control section is 35 to 70 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. It is very gravelly fine sandy loam, extremely gravelly loam, or extremely gravelly fine sandy loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is extremely gravelly loam or extremely gravelly fine sandy loam.

Ohop Series

The Ohop series consists of very deep, well drained soils formed in recent volcanic mudflow. These soils are on river terraces and valley toe slopes. Slopes are 0 to 15 percent. Elevation is 1,400 to 2,400 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 120 to 145 days.

These soils are loamy-skeletal, mixed, frigid Aquic Dystrochrepts.

Typical pedon of Ohop very gravelly loam, 0 to 15 percent slopes, in Pierce County, about 200 feet south of St. Regis Paper Company King Creek Access Road, 2,300 feet south and 1,600 feet east of the northwest corner of sec. 17, T. 17 N., R. 6 E.

Oi—2 inches to 0; duff consisting of partially decomposed needles, twigs, and fine, matted roots.

A—0 to 7 inches; dark grayish brown (10YR 4/2) very gravelly loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; slightly hard, friable, slightly sticky and nonplastic; many fine, very fine, and medium roots; about 40 percent pebbles; moderately acid; clear smooth boundary.

Bw—7 to 16 inches; dark brown (10YR 3/3) very gravelly loam, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and nonplastic; many fine and very fine roots; about 40 percent pebbles and 10 percent cobbles; moderately acid; gradual smooth boundary.

BC—16 to 28 inches; brown (10YR 4/3) extremely gravelly sandy loam, pale brown (10YR 6/3) dry; common medium distinct yellowish brown (10YR 5/6) mottles, brownish yellow (10YR 6/6) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few medium roots; 50 percent pebbles and 10 percent cobbles; moderately acid; gradual smooth boundary.

C—28 to 60 inches; brown (10YR 4/3) extremely gravelly sandy loam, light gray (10YR 7/2) dry; massive; very hard, firm, nonsticky and nonplastic; 50 percent pebbles and 20 percent cobbles; strongly acid.

The particle-size control section is 10 to 25 percent volcanic ash and cinders, 35 to 50 percent pebbles, and 10 to 30 percent cobbles by volume. Reaction is strongly acid or moderately acid throughout the profile.

The A horizon has value of 3 or 4 when moist and 5 or 6 when dry and chroma of 2 to 4 when moist and dry.

The Bw horizon has value of 3 or 4 when moist and 6 or 7 when dry and chroma of 2 to 4 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

The BC horizon has value of 3 or 4 when moist and 6 or 7 when dry and chroma of 2 to 4 when moist and dry. It is gravelly loam, extremely gravelly sandy loam, extremely gravelly loam, or very gravelly sandy loam.

The C horizon has value of 3 to 5 when moist and chroma of 2 to 4 when moist and dry. It is very gravelly, extremely gravelly, or very cobbly sandy loam.

Olomount Series

The Olomount series consists of well drained soils formed in a mixture of glacial till, volcanic ash, and colluvium derived from andesite. These soils are moderately deep to fractured bedrock. They are on mountain back slopes. Slopes are 8 to 90 percent. Elevation is 800 to 1,800 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 130 to 150 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Olomount gravelly loam, 8 to 30 percent slopes, in King County, about 8 miles east of Cherry Valley, 800 feet east and 200 feet south of the northwest corner of sec. 9, T. 26 N., R. 8 E.

Oi—2 inches to 1 inch; undecomposed needles, leaves, and twigs.

Oa—1 inch to 0; decomposed organic mat.

A—0 to 6 inches; dark brown (7.5YR 3/4) gravelly loam, brown (7.5YR 5/4) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; weakly smeary; many very fine, fine, and medium roots; many fine irregular pores; about 20 percent pebbles; moderately acid; clear smooth boundary.

Bs1—6 to 14 inches; strong brown (7.5YR 5/6) gravelly loam, reddish yellow (7.5YR 6/6) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine irregular pores; about 25 percent pebbles; moderately acid; gradual smooth boundary.

Bs2—14 to 33 inches; brownish yellow (10YR 6/6) very gravelly loam, yellow (10YR 7/6) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 45 percent pebbles; moderately acid; clear smooth boundary.

2R—33 inches; fractured andesite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the control section is 35 to 55 percent.

The A horizon has hue of 10YR or 7.5YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 to 4 when moist and dry. The Bs horizon has hue of 10YR or 7.5YR, value of 4 to 6 when moist and 5 to 7 when dry, and chroma of 4 to 6 when moist and dry. The Bs1 horizon is gravelly loam or very gravelly loam.

Oridia Series

The Oridia series consists of very deep, poorly drained soils formed in alluvium. These soils are on flood plains. Slopes are 0 to 2 percent. Elevation is 30 to 120 feet. The average annual precipitation is 35 to 55 inches, and the mean annual air temperature is about

50 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-silty, mixed, nonacid, mesic Aeric Fluvaquents.

Typical pedon of Oridia silt loam, 0 to 2 percent slopes, in King County, about 1.5 miles north of Carnation, 2,400 feet south and 1,500 feet east of the northwest corner of sec. 9, T. 25 N., R. 7 E.

Ap—0 to 11 inches; brown (10YR 5/3) silt loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common fine and few coarse tubular pores; moderately acid; gradual smooth boundary.

Cg1—11 to 19 inches; brown (10YR 5/3) silt loam, yellowish brown (10YR 5/6) dry; few fine prominent yellowish brown (10YR 5/6) mottles, brownish yellow (10YR 6/6) dry, and few fine faint light brownish gray (10YR 6/2) mottles, light gray (10YR 7/2) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular and common fine and few coarse tubular pores; moderately acid; gradual smooth boundary.

Cg2—19 to 36 inches; grayish brown (10YR 5/2) very fine sandy loam, light gray (10YR 7/2) dry; few medium prominent yellowish brown (10YR 5/6) mottles, brownish yellow (10YR 6/6) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine irregular and common fine and few coarse tubular pores; slightly acid; gradual smooth boundary.

Cg3—36 to 47 inches; brown (10YR 5/3) very fine sandy loam, light gray (10YR 7/2) dry; few medium prominent yellowish brown (10YR 5/6) mottles, brownish yellow (10YR 6/6) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular and common fine and few coarse tubular pores; few lenses of fine sandy loam about 0.5 inch thick; slightly acid; gradual smooth boundary.

Cg4—47 to 60 inches; gray (10YR 6/1) and light brownish gray (10YR 6/2) very fine sandy loam, white (10YR 8/1 and 8/2) dry; few medium prominent strong brown (7.5YR 5/8) mottles, reddish yellow (7.5YR 6/8) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine irregular pores; neutral.

The content of clay in the control section is 10 to 18 percent. The distribution of organic material in these soils varies with increasing depth.

The Ap horizon has value of 4 or 5 when moist and 6 or 7 when dry and chroma of 2 or 3 when moist and dry. The Cg horizon has hue of 10YR or 2.5Y, value of 4 to 6 when moist and 5 to 8 when dry, and chroma of 1 to 6 when moist and dry. It is silt loam or very fine sandy loam.

Orthents

Orthents consist of moderately deep to very deep, well drained soils formed in colluvium derived from granite. They are on avalanche chutes and back slopes in the mountains. Slopes are 30 to 100 percent. Elevation is 1,500 to 5,000 feet. The average annual precipitation is 80 to 120 inches, and the mean annual air temperature is about 39 degrees F. The frost-free period is 90 to 140 days.

Typical pedon of Orthents, in an area of Orthents, avalanche chutes-Humods complex, 30 to 100 percent slopes, in King County, about 8 miles east of Skykomish; 2,500 feet east and 1,100 feet south of the northwest corner of sec. 30, T. 26 N., R. 13 E.

A—0 to 2 inches; very dark brown (10YR 2/2) gravelly sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; many very fine irregular pores; about 20 percent pebbles; strongly acid; abrupt smooth boundary.

Bw—2 to 24 inches; dark yellowish brown (10YR 3/4) very cobbly loamy sand, light yellowish brown (10YR 6/4) dry; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; about 20 percent cobbles and 40 percent pebbles; strongly acid; clear wavy boundary.

C—24 to 30 inches; dark yellowish brown (10YR 4/4) extremely stony loamy sand, light yellowish brown (10YR 6/4) dry; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine irregular pores; about 40 percent stones, 20 percent cobbles, and 20 percent pebbles; strongly acid; abrupt smooth boundary.

2R—30 inches; weathered granite.

The depth to bedrock is 20 to 80 inches. The content of rock fragments in the control section ranges from 50 to 90 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 1 or 2 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of

3 or 4 when moist and dry. It is very gravelly sandy loam or very cobbly loamy sand.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is extremely stony loamy sand or very gravelly sandy loam.

Ovall Series

The Ovall series consists of well drained soils formed in glacial drift mixed with residuum and colluvium derived from andesite. These soils are moderately deep to fractured bedrock. They are on back slopes in the foothills. Slopes are 15 to 65 percent. Elevation is 500 to 1,500 feet. The average annual precipitation is 45 to 60 inches, and the mean annual air temperature is about 51 degrees F. The frost-free period is 140 to 160 days.

These soils are loamy-skeletal, mixed, mesic Typic Xerumbrepts.

Typical pedon of Ovall gravelly loam, 30 to 65 percent slopes, in Pierce County, about 4 miles east of Kapowsin, 100 feet south and 250 feet east of the northwest corner of sec. 11, T. 17 N., R. 5 E.

Oi&Oe—1 inch to 0; fresh and partially decomposed needles, leaves, and twigs.

A—0 to 3 inches; dark brown (10YR 4/3) gravelly loam, pale brown (10YR 6/3) dry; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine irregular pores; about 30 percent pebbles; moderately acid; abrupt smooth boundary.

Bw—3 to 15 inches; brown (10YR 5/3) very gravelly loam, pale brown (10YR 6/3) dry; moderate coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 40 percent pebbles and 15 percent cobbles; moderately acid; clear smooth boundary.

C—15 to 24 inches; brown (10YR 4/3) very gravelly sandy loam, very pale brown (10YR 7/3) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; common medium and few coarse roots; many very fine irregular pores; about 45 percent pebbles and 15 percent cobbles; moderately acid; clear wavy boundary.

2R—24 inches; fractured andesite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the particle-size control section is 35 to 60 percent by volume. The umbric epipedon is 10 to 20 inches thick.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 1 to 3 when moist and dry. The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. It is very gravelly loam or very gravelly sandy loam. The C horizon has value of 3 or 4 when moist and 6 or 7 when dry and chroma of 2 to 4 when moist and dry.

Pastik Series

The Pastik series consists of very deep, moderately well drained soils formed in lake sediments and volcanic ash. These soils are on terraces and escarpments. Slopes are 0 to 30 percent. Elevation is 200 to 800 feet. The average annual precipitation is 45 to 60 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-silty, mixed, mesic Aquic Haplorthods.

Typical pedon of Pastik silt loam, 0 to 30 percent slopes, in King County, about 2 miles southeast of Duvall, 2,100 feet east and 2,700 feet south of the northwest corner of sec. 30, T. 26 N., R. 7 E.

Oi—2 inches to 0; undecomposed organic mat; common fine and medium roots.

A—0 to 6 inches; dark brown (7.5YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine, medium, and coarse roots; many very fine irregular pores; NaF pH 9.8; strongly acid; clear smooth boundary.

E—6 to 12 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine irregular pores; NaF pH 10.5; strongly acid; abrupt smooth boundary.

Bs—12 to 19 inches; dark yellowish brown (10YR 4/4) very fine sandy loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium roots; NaF pH 12.0; strongly acid; clear wavy boundary.

BC—19 to 31 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; NaF pH 11.5; strongly acid; abrupt smooth boundary.

C1—31 to 35 inches; olive brown (2.5Y 4/4) silt loam,

pale yellow (2.5Y 7/3) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine tubular pores; NaF pH 10.0; strongly acid; clear smooth boundary.

C2—35 to 60 inches; grayish brown (2.5Y 5/2) silt loam, light gray (2.5Y 7/2) dry; few fine prominent mottles, strong brown (7.5YR 5/6) moist and dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; few very fine irregular pores; NaF pH 9.8; strongly acid.

The thickness of the solum is 20 to 40 inches. The depth to mottles with chroma of 2 or less is more than 30 inches. The content of rock fragments in the control section is 0 to 5 percent.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 10YR or 7.5YR, value of 4 to 6 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is silt loam, very fine sandy loam, or silty clay loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is silt loam, very fine sandy loam, or silty clay loam below a depth of 40 inches.

Persis Series

The Persis series consists of very deep, well drained soils formed in a mixture of volcanic ash and alluvium over deltaic deposits. These soils are on stream terraces. Slopes are 0 to 8 percent. Elevation is 1,000 to 1,600 feet. The average annual precipitation is 80 to 120 inches, and the mean annual air temperature is about 47 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-loamy over sandy or sandy-skeletal, mixed, mesic Humic Haplorthods.

Typical pedon of Persis sandy loam, 0 to 8 percent slopes, in King County, along a spur road of the Weyerhaeuser Road 30, about 600 feet east and 1,400 feet south of the northwest corner of sec. 16, T. 25 N., R. 9 E.

Oi—3.5 inches to 0.5 inch; moss, needles, and partially decomposed wood fragments.

Oa—0.5 inch to 0; decomposed forest litter.

E—0 to 1.5 inches; brown (7.5YR 4/2) sandy loam, pinkish gray (7.5YR 6/2) dry; moderate fine and very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many very fine tubular pores; about 2 percent rounded pebbles; NaF pH 9.2; extremely acid; abrupt smooth boundary.

Bhs—1.5 to 4 inches; dark reddish brown (5YR 3/2) sandy loam, reddish brown (5YR 4/3) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; many very fine tubular pores; about 2 percent rounded pebbles; NaF pH 11.5; extremely acid; clear irregular boundary.

Bs1—4 to 13 inches; dark reddish brown (5YR 3/4) loam, brown (7.5YR 5/4) dry; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common very fine tubular pores; about 2 percent rounded pebbles; NaF pH 12.0+; strongly acid; clear wavy boundary.

Bs2—13 to 15 inches; dark brown (7.5YR 4/4) loam, light brown (7.5YR 6/4) dry; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common very fine tubular pores; about 5 percent rounded pebbles; NaF pH 12.0+; strongly acid; clear wavy boundary.

Bs3—15 to 29 inches; strong brown (7.5YR 4/6) loam, reddish yellow (7.5YR 6/6) dry; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; few very fine roots; common very fine tubular pores; about 5 percent rounded pebbles; NaF pH 12.0+; moderately acid; clear wavy boundary.

2C—29 to 60 inches; grayish brown (2.5Y 5/2) sand, light gray (2.5Y 7/2) dry; massive; slightly hard, firm, nonsticky and nonplastic; weakly compact in place; common very fine interstitial pores; about 5 percent rounded pebbles; NaF pH 11.5; moderately acid.

By volume, the content of rock fragments ranges from 0 to 15 percent in the upper part of the control section and from 0 to 25 percent in the lower part.

The E horizon has hue of 7.5YR or 10YR when moist and dry, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs and Bs1 horizons have hue of 2.5YR or 5YR when moist and 5YR or 7.5YR when dry, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 2 to 4 when moist and dry. They are fine sandy loam, sandy loam, or loam. Reaction is extremely acid or very strongly acid in the Bhs horizon and very strongly acid or strongly acid in the Bs1 horizon.

The Bs2 and Bs3 horizons have hue of 5YR or 7.5YR when moist and 7.5YR or 10YR when dry, value of 4 or 5 when moist and 6 or 7 when dry, and chroma

of 4 to 6 when moist and dry. They are fine sandy loam or loam. Reaction is strongly acid or moderately acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 or 3 when moist and dry. It is loamy sand, sand, gravelly loamy sand, or gravelly sand. The content of rock fragments is 0 to 25 percent by volume.

Pheeney Series

The Pheeney series consists of well drained soils formed in volcanic ash and in colluvium derived from andesite or breccia and tuff. These soils are moderately deep to fractured bedrock. They are on mountain back slopes. Slopes are 8 to 90 percent. Elevation is 1,500 to 2,800 feet. The average annual precipitation is 55 to 85 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 160 to 180 days.

These soils are medial-skeletal, frigid Andic Haplumbrepts.

Typical pedon of Pheeney gravelly loam, in an area of Pheeney-Rock outcrop complex, 30 to 90 percent slopes, in Pierce County, about 5 miles east of Ohop; 1,800 feet south and 1,000 feet west of the northeast corner of sec. 30, T. 17 N., R. 6 E.

Oi—3 inches to 1 inch; undecomposed needles, leaves, and twigs.
Oa—1 inch to 0; decomposed organic mat.
A—0 to 11 inches; very dark brown (10YR 2/2) gravelly loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, medium, and coarse roots; many very fine irregular and tubular pores; about 25 percent pebbles and 5 percent cobbles; NaF pH 10.0; strongly acid; clear wavy boundary.
Bw1—11 to 21 inches; dark brown (10YR 4/3) very gravelly loam, pale brown (10YR 6/3) dry; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium and coarse roots; common very fine irregular and tubular pores; about 40 percent pebbles and 10 percent cobbles; NaF pH 10.5; moderately acid; gradual wavy boundary.
Bw2—21 to 34 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam, light yellowish brown (10YR 6/4) dry; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few very fine, fine, and medium roots; common very fine irregular and tubular pores; about 45 percent pebbles and 20 percent cobbles; NaF pH 11.0; moderately acid; abrupt irregular boundary.
R—34 inches; fractured andesite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 35 to 70 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry. The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly or extremely gravelly loam.

Philippa Series

The Philippa series consists of moderately deep, moderately well drained soils formed in a mixture of volcanic ash, colluvium, and ablation till over dense glacial till. These soils are in cirques and on lateral moraines on mountains. Slopes are 0 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 90 to 140 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 150 to 170 days.

These soils are loamy-skeletal, mixed, frigid, ortstein Humic Haplorthods.

Typical pedon of Philippa sandy loam, 0 to 30 percent slopes, in King County, along a spur road of Forest Service Road 50, about 800 feet south of the Tolt-Seattle Water Supply Reservoir, 2,600 feet east and 1,500 feet south of the northwest corner of sec. 34, T. 26 N., R. 9 E.

Oi—2 inches to 0.5 inch; moss, twigs, and needles.
Oa—0.5 inch to 0; decomposed forest litter; abrupt smooth boundary.
A—0 to 3 inches; dark brown (7.5YR 3/2) sandy loam, brown (7.5YR 5/3) dry; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium roots; many very fine interstitial pores; about 5 percent subangular pebbles; NaF pH 9.6; very strongly acid; abrupt smooth boundary.
E—3 to 4 inches; dark grayish brown (10YR 4/2) coarse sandy loam (volcanic ash), pinkish gray (7.5YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine interstitial pores; about 5 percent subangular pebbles; NaF pH 9.6; extremely acid; abrupt smooth boundary.

Bhs—4 to 9 inches; variegated 70 percent dark reddish brown (5YR 3/3) and 30 percent strong brown (7.5YR 4/6) gravelly silt loam, reddish brown (5YR 4/3) and reddish yellow (7.5YR 6/6) dry; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; moderately smeary; common fine and medium roots; common very fine interstitial pores; about 15 percent subangular pebbles; NaF pH 12.0+; very strongly acid; gradual wavy boundary.

Bs—9 to 18 inches; dark brown (7.5YR 4/4) gravelly silt loam, reddish yellow (7.5YR 6/6) dry; moderate fine and very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; moderately smeary; common fine roots; common very fine interstitial pores; about 25 percent subangular pebbles; NaF pH 12.0+; very strongly acid; clear smooth boundary.

BCs—18 to 28 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam, yellowish brown (10YR 5/6) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderately smeary; few very fine roots; common very fine interstitial pores; about 45 percent subangular pebbles and 10 percent cobbles; NaF pH 12.0+; very strongly acid; abrupt smooth boundary.

Bsm—28 to 60 inches; dark grayish brown (2.5Y 4/2) ortstein (cemented glacial till) that breaks to extremely gravelly loamy sand, light brownish gray (2.5Y 6/2) dry; common fine prominent dark reddish brown (5YR 3/3) and reddish brown (5YR 4/4) mottles; massive; extremely hard, extremely firm, nonsticky and nonplastic; about 60 percent subangular pebbles and 10 percent cobbles; NaF pH 12.0+; strongly acid.

The depth to ortstein is 20 to 40 inches. The content of rock fragments in the control section ranges from 35 to 50 percent by volume.

The A horizon has hue of 7.5YR or 10YR when moist and dry, value of 4 or 5 when dry, and chroma of 2 or 3 when moist and dry. Reaction is extremely acid or very strongly acid.

The E horizon has hue of 7.5YR or 10YR when moist and dry, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry. It is sandy loam or coarse sandy loam.

The Bhs horizon has hue of 7.5YR or 5YR when moist and dry, matrix value of 4 or 5 when dry, and matrix chroma of 2 or 3 when moist and dry. It is silt loam, loam, gravelly silt loam, or gravelly loam. The content of rock fragments is 10 to 20 percent by volume.

The Bs horizon has chroma of 4 to 6 when dry. It is gravelly loam, gravelly silt loam, or very gravelly loam. The content of rock fragments is 20 to 40 percent by volume. Reaction is very strongly acid or strongly acid.

The BCs horizon has value of 5 or 6 when dry and chroma of 4 to 6 when moist and dry. It is very gravelly loam, very gravelly sandy loam, extremely gravelly loam, or extremely gravelly sandy loam. The content of rock fragments is 50 to 70 percent by volume. Reaction is very strongly acid or strongly acid.

The Bsm horizon has value of 4 or 5 when moist and 6 or 7 when dry. It is ortstein made up of iron and organic material. It breaks to extremely gravelly loamy sand or extremely gravelly loamy coarse sand. The content of rock fragments is 60 to 80 percent by volume.

Pierking Series

The Pierking series consists of very deep, somewhat poorly drained soils formed in stream alluvium and mudflow deposits. These soils are on river terraces. Slopes are 0 to 5 percent. Elevation is 1,200 to 2,000 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 110 to 130 days.

These soils are loamy-skeletal, mixed, nonacid, frigid Typic Haplaquepts.

Typical pedon of Pierking gravelly sandy loam, 0 to 3 percent slopes, in Pierce County, about 100 feet north of St. Regis Paper Company Road 2, about 1,700 feet north and 2,500 feet east of the southwest corner of sec. 3, T. 16 N., R. 6 E.

Oe—4 to 2 inches; partially decomposed leaf litter and matted roots.

Oa—2 inches to 0; very dark brown (10YR 2/2), well decomposed organic material, very dark grayish brown (10YR 3/2) after rubbing.

A—0 to 3 inches; dark brown (7.5YR 3/2) loam, grayish brown (10YR 5/2) dry; strong medium granular structure; soft, friable, nonsticky and slightly plastic; many fine and very fine roots; strongly acid; abrupt wavy boundary.

Bg1—3 to 22 inches; dark brown (7.5YR 4/2) very gravelly sandy loam, light brownish gray (10YR 6/2) dry; many large prominent dark red (2.5YR 3/6) and reddish yellow (7.5YR 6/6) mottles, yellowish red (5YR 5/6) and light yellowish brown (10YR 6/4) dry; massive; hard, friable, slightly sticky and slightly plastic; common very fine roots; about 35 percent pebbles; moderately acid; clear smooth boundary.

Bg2—22 to 34 inches; dark gray (N 4/0) very gravelly sandy loam, pale red (2.5YR 6/2) dry; common

medium distinct dark brown (7.5YR 4/2) and yellowish red (5YR 3/6) mottles, brown (7.5YR 5/4) and brownish yellow (10YR 6/6) dry; massive; hard, friable, slightly sticky and slightly plastic; about 45 percent pebbles; moderately acid; clear smooth boundary.

Cg—34 to 60 inches; dark bluish gray (5B 4/1) very gravelly sandy loam, gray (N 5/0) dry; massive; hard, friable, slightly sticky and nonplastic; about 50 percent pebbles; slightly acid.

The thickness of the solum is 15 to 40 inches. The content of clay in the particle-size control section is 5 to 18 percent. The content of rock fragments is 35 to 55 percent by weighted average.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 1 or 2 when moist and dry. Reaction is strongly acid or moderately acid.

The Bg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 3 to 5 when moist and 5 or 6 when dry and chroma of 0 to 2 when moist and dry. It has faint to prominent mottles with hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 6, and chroma of 2 to 6 when moist and dry. This horizon is gravelly sandy loam or very gravelly sandy loam. Reaction is strongly acid or moderately acid.

The Cg horizon has hue of 10YR, 2.5Y, 5Y, 5B, or 5Bg or is neutral in hue. It has value of 3 to 5 when moist and 5 to 7 when dry and chroma of 0 to 2 when moist and dry. In some pedons it has faint or distinct mottles with hue of 5YR or 7.5YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 4 to 8 when moist and dry. This horizon is very gravelly sandy loam or very gravelly loamy sand. Reaction is strongly acid to slightly acid.

Pilchuck Series

The Pilchuck series consists of very deep, somewhat excessively drained soils formed in sandy alluvium. These soils are on flood plains. Slopes are 0 to 3 percent. Elevation is 200 to 800 feet. The average annual precipitation is 35 to 60 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 170 to 190 days.

These soils are mixed, mesic Dystric Xeropsamments.

Typical pedon of Pilchuck loamy fine sand, 0 to 3 percent slopes, in King County, about 11 miles east of Enumclaw, along the White River, 1,100 feet east and 1,200 feet south of the northwest corner of sec. 2, T. 19 N., R. 8 E.

Oi—0.5 inch to 0; undecomposed needles, leaves, and twigs.

C1—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark grayish brown (10YR 4/2) dry; single grain; loose; few very fine, fine, and medium roots; many fine irregular pores; slightly acid; abrupt smooth boundary.

C2—9 to 12 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark gray (10YR 4/1) dry; single grain; loose; many very fine, fine, and medium and common coarse roots; many fine irregular pores; moderately acid; abrupt smooth boundary.

C3—12 to 26 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark gray (10YR 4/1) dry; single grain; loose; common very fine, fine, and medium roots; many fine irregular pores; slightly acid; clear smooth boundary.

C4—26 to 37 inches; very dark gray (10YR 3/1) fine sand, dark gray (10YR 4/1) dry; single grain; loose; common very fine and fine roots; many fine irregular pores; slightly acid; clear smooth boundary.

C5—37 to 55 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark gray (10YR 4/1) dry; single grain; loose; common very fine, fine, medium, and coarse roots; many fine irregular pores; slightly acid; clear smooth boundary.

C6—55 to 60 inches; black (10YR 2/1) very gravelly sand, very dark gray (10YR 3/1) dry; single grain; loose; many fine irregular pores; about 40 percent pebbles and 15 percent cobbles; slightly acid.

The content of rock fragments in the control section ranges from 0 to 15 percent. Individual horizons below a depth of 40 inches may have 15 to 60 percent rock fragments. The content of organic carbon decreases irregularly with increasing depth.

The C horizon has hue of 10YR or 2.5Y, value of 2 or 3 when moist and 3 to 5 when dry, and chroma of 1 to 3 when moist and dry. It is loamy fine sand or fine sand within a depth of 40 inches and loamy fine sand, fine sand, gravelly sand, or very gravelly sand below that depth.

Pitcher Series

The Pitcher series consists of very deep, well drained soils formed in volcanic ash over colluvium and residuum derived from extrusive igneous rocks or breccia and tuff. These soils are on mountain back slopes and toe slopes. Slopes are 8 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 55 to 80 inches, and the mean annual

air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are loamy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Pitcher sandy loam, 30 to 65 percent slopes, in King County, about 2 miles east of Crystal Village, 2,200 feet south and 300 feet east of the northwest corner of sec. 20, T. 19 N., R. 10 E.

Oi—1.5 inches to 1 inch; leaves, needles, and twigs; abrupt smooth boundary.

Oa—1 inch to 0; decomposed organic litter; abrupt smooth boundary.

A—0 to 8 inches; dark brown (10YR 4/3) sandy loam (volcanic ash and cinders), pale brown (10YR 6/3) dry; single grain; loose; weakly smeary; common very fine, fine, medium, and coarse roots; about 10 percent pebbles and 5 percent hard cinders; moderately acid; clear smooth boundary.

2Bs1—8 to 16 inches; dark brown (10YR 4/3) gravelly sandy loam, light yellowish brown (10YR 6/4) dry; single grain; loose; weakly smeary; common very fine, fine, medium, and coarse roots; about 15 percent pebbles and 10 percent hard cinders; slightly acid; clear smooth boundary.

2Bs2—16 to 24 inches; brown (10YR 4/3) very gravelly loam, light yellowish brown (10YR 6/4) dry; dark brown (7.5YR 4/4), weathered, hard cinders and pebbles; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and fine and few medium roots; about 40 percent pebbles, 15 percent hard cinders, and 1 percent cobbles; slightly acid; clear smooth boundary.

2Bs3—24 to 29 inches; brown (10YR 4/3) very gravelly loam, light yellowish brown (10YR 6/4) dry; moderate fine subangular structure; soft, friable, slightly sticky and slightly plastic; weakly smeary; common very fine and few fine roots; about 10 percent hard cinders, 45 percent pebbles, and 1 percent cobbles; moderately acid; gradual smooth boundary.

2BC1—29 to 38 inches; brown (10YR 4/3) very gravelly loam, very pale brown (10YR 7/3) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; about 50 percent pebbles and 5 percent cobbles; moderately acid; gradual smooth boundary.

2BC2—38 to 60 inches; yellowish brown (10YR 5/4) very gravelly loam, very pale brown (10YR 7/3) dry; moderate medium subangular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine roots; about 50 percent pebbles and 5 percent cobbles; slightly acid.

The upper 7 to 14 inches of these soils is more than 60 percent volcanic ash and pumice. The particle-size control section ranges from 35 to 60 percent rock fragments by volume.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. Reaction is strongly acid or moderately acid.

The 2Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist. It is sandy loam or loam in the fine-earth fraction. It has 0 to 20 percent hard cinders, 10 to 45 percent pebbles, and 0 to 15 percent cobbles. This horizon is weakly or moderately smeary throughout. Reaction is strongly acid to slightly acid.

The 2BC horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 to 6 when moist and dry. It is very gravelly sandy loam, very gravelly loam, extremely cobbly sandy loam, or extremely cobbly loam. It has 30 to 50 percent pebbles and 5 to 40 percent cobbles. Reaction is moderately acid or slightly acid.

Playco Series

The Playco series consists of very deep, well drained soils formed in volcanic ash and pumice mixed with colluvium derived from andesite, breccia, and tuff. These soils are on mountain back slopes. Slopes are 5 to 90 percent. Elevation is 2,500 to 3,600 feet. The average annual precipitation is 75 to 90 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 110 to 130 days.

These soils are loamy-skeletal, mixed Haplic Cryohumods.

Typical pedon of Playco loamy sand, 30 to 65 percent slopes, in Pierce County, about 8 miles east of Enumclaw, 1,400 feet west and 1,250 feet south of the northeast corner of sec. 20, T. 20 N., R. 8 E.

Oi—1 to 0.5 inch; loose forest litter, including needles, twigs, bark, and moss.

Oa—0.5 inch to 0; decomposed organic material.

E—0 to 3 inches; dark gray (10YR 4/1) loamy sand (volcanic ash and pumice), gray (7.5YR 5/1) dry; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; NaF pH less than 9.2; very strongly acid; abrupt smooth boundary.

Bhs1—3 to 6 inches; dark reddish brown (5YR 3/3) sandy loam (volcanic ash and pumice), dark brown (7.5YR 4/4) dry; weak medium subangular blocky

structure; slightly hard, friable, slightly sticky and slightly plastic; about 5 percent pebbles; many very fine, fine, medium, and coarse roots; NaF pH 12.0; very strongly acid; abrupt smooth boundary.

Bhs2—6 to 10 inches; dark brown (7.5YR 3/3) sandy loam (volcanic ash and pumice), yellowish brown (10YR 5/6) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and many fine and medium roots; NaF pH 12.0; moderately acid; clear irregular boundary.

2Bs—10 to 21 inches; dark brown (7.5YR 4/4) very gravelly loam, yellowish brown (10YR 5/6) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many fine, medium, and coarse roots; about 30 percent hard angular pebbles and 10 percent cobbles; NaF pH 11.5; moderately acid; clear smooth boundary.

2BCs—21 to 36 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam, very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; very soft, very friable, slightly sticky and slightly plastic; moderately smeary; few very fine and fine roots; few very fine and common fine interstitial pores; about 55 percent angular hard pebbles and 10 percent cobbles; NaF pH 11.5; moderately acid; clear smooth boundary.

2C—36 to 60 inches; yellowish brown (10YR 5/4) very gravelly loam, very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; common fine continuous tubular pores; about 10 percent hard angular cobbles, 40 percent hard angular pebbles, and 5 percent stones; NaF pH 11.5; moderately acid.

The content of rock fragments, including hard cinders, in the control section is 35 to 70 percent by volume.

The E horizon has hue of 10YR or 7.5YR or is neutral in hue. It has value of 4 to 7 when moist and 5 to 8 when dry and chroma of 0 to 2 when moist and dry. The content of rock fragments is 0 to 25 percent. Reaction is very strongly acid or strongly acid.

The Bhs horizon is 7 to 12 inches thick. It has hue of 5YR or 7.5YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It is loamy sand or sandy loam (volcanic ash and fine pumice). Reaction is very strongly acid to moderately acid.

The 2Bs and 2BCs horizons have hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist, and chroma of 3 to 6 when moist. They are very gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, or extremely gravelly loam. Reaction is strongly acid to slightly acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5 when moist and 6 to 8 when dry, and chroma of 3 to 6 when moist and dry. It is very gravelly sandy loam, very gravelly loam, or extremely gravelly loam. It has 30 to 50 percent pebbles and 10 to 20 percent cobbles. Reaction is strongly acid to slightly acid.

Puget Series

The Puget series consists of very deep, poorly drained soils formed in alluvium. These soils are on flood plains. Slopes are 0 to 2 percent. Elevation is 25 to 500 feet. The average annual precipitation is 35 to 55 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are fine-silty, mixed, nonacid, mesic Aeric Fluvaquents.

Typical pedon of Puget silty clay loam, 0 to 2 percent slopes, in King County, about 0.5 mile southwest of Carnation, 2,640 feet north and 600 feet east of the southwest corner of sec. 21, T. 25 N., R. 7 E.

A1—0 to 1 inch; very dark grayish brown (2.5Y 3/2) silt loam, moderate thin platy structure; hard, firm, slightly sticky and slightly plastic; many roots; moderately acid; abrupt smooth boundary.

A2—1 to 7 inches; dark grayish brown (2.5Y 4/2) silty clay loam, light gray (2.5Y 7/2) dry; common fine prominent dark brown (7.5YR 4/4) mottles; moderate very coarse prismatic structure; hard, firm, sticky and plastic; many roots; moderately acid; clear smooth boundary.

Cg1—7 to 17 inches; grayish brown (2.5Y 5/2) silty clay loam, light gray (2.5Y 7/2) dry; common medium prominent strong brown (7.5YR 5/6, 5/8) mottles; moderate medium prismatic structure; hard, firm, sticky and plastic; many roots; slightly acid; clear smooth boundary.

Cg2—17 to 25 inches; grayish brown (2.5Y 5/2) silty clay loam, light olive gray (5Y 6/2) dry; many medium prominent yellowish red (5YR 5/8, 4/8) mottles; strong very coarse prismatic structure; very hard, firm, sticky and plastic; common roots; slightly acid; abrupt smooth boundary.

Cg3—25 to 31 inches; grayish brown (2.5Y 5/2) silty clay loam, light gray (5Y 7/2) dry; many medium prominent dark yellowish brown (10YR 3/6) and yellowish red (5YR 5/8, 4/6) mottles; moderate medium angular blocky structure; hard, firm, sticky and plastic; few roots; moderately acid; abrupt wavy boundary.

Cg4—31 to 40 inches; grayish brown (2.5Y 5/2) silty clay loam, light gray (5Y 7/1) dry; common fine prominent strong brown (7.5YR 5/6) and yellowish red (5YR 4/8) mottles; strong very coarse prismatic structure; hard, firm, sticky and plastic; few roots; moderately acid; clear smooth boundary.

Cg5—40 to 45 inches; greenish gray (5GY 5/1) silty clay loam, light gray (5Y 7/1) and white (5Y 8/1) dry; common fine prominent strong brown (7.5YR 5/6) and brown (7.5YR 4/4) mottles; massive; hard, firm, sticky and plastic; moderately acid; clear smooth boundary.

Cg6—45 to 60 inches; gray (5Y 5/1) silty clay, light gray (5Y 7/1) dry; few fine prominent yellowish red (5YR 4/8, 5/8) and common medium distinct light olive brown (2.5Y 5/4) mottles; massive; very hard, firm, sticky and plastic; moderately acid.

The water table is at or near the surface from November through April unless the soils have been drained.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5 when moist and 4 to 7 when dry, and chroma of 1 or 2 when moist and dry. Reaction is moderately acid to neutral.

The part of the Cg horizon within a depth of 30 inches has hue of 10YR, 5YR, or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 when moist and 1 or 2 when dry. The part below a depth of 30 inches has hue of 10YR, 2.5Y, 5Y, or 5GY or is neutral in hue. It has value of 4 or 5 when moist and 6 or 7 when dry and chroma of 0 to 2 when moist and dry. The part of the Cg horizon within a depth of 40 inches is dominantly silt loam or silty clay loam, but in some pedons it has strata of sand or loamy sand less than 2 inches thick. The part below a depth of 40 inches is dominantly silt loam, silty clay loam, or silty clay, but in some pedons it has strata of sand or loamy sand. Reaction is slightly acid to very strongly acid throughout the Cg horizon.

Ragnar Series

The Ragnar series consists of very deep, well drained soils formed in glacial outwash. These soils are on terraces and escarpments. Slopes are 6 to 45 percent. Elevation is 500 to 1,000 feet. The average annual precipitation is 35 to 60 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 170 to 190 days.

These soils are coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Ragnar loam, 15 to 30 percent slopes, in King County, about 1 mile east of Hobart, 1,300 feet south and 800 feet east of the northwest corner of sec. 5, T. 22 N., R. 7 E.

Oi—1 inch to 0; undecomposed needles, leaves, and twigs.

A—0 to 3 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many fine irregular pores; about 5 percent pebbles; moderately acid; abrupt smooth boundary.

Bs1—3 to 13 inches; dark brown (7.5YR 3/4) loam, brown (7.5YR 5/4) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

Bs2—13 to 24 inches; dark yellowish brown (10YR 4/4) sandy loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine roots; many very fine pores; about 5 percent pebbles; moderately acid; clear wavy boundary.

2C—24 to 60 inches; light olive brown (2.5Y 5/4) loamy sand, pale yellow (2.5Y 7/4) dry; single grain; loose; many fine irregular pores; moderately acid.

Depth to the 2C horizon ranges from 20 to 35 inches. The content of rock fragments in the particle-size control section is 0 to 10 percent by volume.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 10YR or 7.5YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. The Bs1 horizon is loam or sandy loam.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is loamy sand or sand.

Reggad Series

The Reggad series consists of very deep, excessively drained soils formed in a mixture of volcanic ash, organic material, and pumice over rock rubble. These soils are on mountain back slopes. Slopes are 30 to 90 percent. Elevation is 2,800 to 6,000 feet. The average annual precipitation is 70 to 130 inches, and the mean annual air temperature is about 41 degrees F. The frost-free period is 90 to 110 days.

These soils are dysic Typic Cryofolists.

Typical pedon of Reggad muck, in an area of

Reggad-Haywire complex, 45 to 90 percent slopes, in the Denny Creek area in King County, about 500 feet west of the I-90 freeway; 800 feet north and 500 feet west of the southeast corner of sec. 6, T. 22 N., R. 11 E.

Oi—0 to 1 inch; loose leaves, twigs, and moss; extremely acid; abrupt smooth boundary.
Oe—1 to 2 inches; dark brown (7.5YR 3/4) muck, dark brown (7.5YR 4/4) dry; massive; hard, friable, nonsticky and nonplastic; 90 percent fiber before rubbing and 50 percent after rubbing; many very fine and fine roots; extremely acid; abrupt smooth boundary.
Oa1—2 to 8 inches; black (10YR 2/1) very cobbly muck, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; about 10 percent fiber before rubbing and 1 percent after rubbing; about 20 percent angular cobbles and 25 percent angular pebbles; very strongly acid; abrupt wavy boundary.
Oa2—8 to 17 inches; very dark grayish brown (10YR 3/2) very cobbly muck, dark grayish brown (10YR 4/2) dry; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; few fine and medium roots; about 20 percent angular cobbles, 25 percent angular pebbles, and 25 percent pumice 2 to 5 millimeters in diameter; NaF pH 11.5; moderately acid; abrupt irregular boundary.
2C1—17 to 28 inches; dark yellowish brown (10YR 4/4) angular rock fragments, dark yellowish brown (10YR 3/4) dry; about 10 percent stones, 60 percent cobbles, and 20 percent pebbles; voids partially filled with coarse sand; few fine and medium roots; moderately acid; gradual irregular boundary.
2C2—28 to 60 inches; dark yellowish brown (10YR 4/4) angular rock fragments, dark yellowish brown (10YR 3/4) dry; about 10 percent stones, 60 percent cobbles, and 20 percent pebbles; voids partially filled with coarse sand; strongly acid.

The O horizon is dominantly sapric material. The Oi, Oe, and Oa1 horizons are extremely acid or very strongly acid, and the Oa2 horizon is strongly acid or moderately acid. The Oa2 horizon has hue of 7.5YR or 10YR and value of 2 or 3 when moist and 3 or 4 when dry. It has 20 to 40 percent volcanic ash and pumice.

The 2C horizon is sand or coarse sand in the fine-earth fraction. The fine earth is generally confined to the upper 20 inches of the horizon and does not exceed 15 percent of the total volume. Most interstices are not filled with fines. In some pedons this horizon has volcanic ash and pumice.

Reichel Series

The Reichel series consists of deep and very deep, well drained soils formed in a mixture of volcanic ash and colluvium and residuum derived from andesite or breccia and tuff. These soils are on glacially modified mountain back slopes and ridgetops. Slopes are 6 to 65 percent. Elevation is 2,500 to 4,000 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 140 to 150 days.

These soils are medial Andic Cryumbrepts.

Typical pedon of Reichel silt loam, 6 to 30 percent slopes, in Pierce County, about 4.5 miles southeast of Ohop, 500 feet south and 1,000 feet east of the northwest corner of sec. 6, T. 16 N., R. 6 E.

Oi—3 inches to 1 inch; undecomposed needles, leaves, and twigs.
Oa—1 inch to 0; very dark grayish brown (10YR 3/2), decomposed organic mat; many very fine, fine, and medium roots.
A1—0 to 10 inches; very dark brown (10YR 2/2) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 10 percent pebbles; NaF pH 11.0; very strongly acid; clear smooth boundary.
A2—10 to 18 inches; very dark grayish brown (10YR 3/2) silt loam, yellowish brown (10YR 5/4) dry; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many fine irregular pores; about 10 percent pebbles; NaF pH 11.5; strongly acid; abrupt irregular boundary.
Bw—18 to 28 inches; dark yellowish brown (10YR 4/4) gravelly loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many fine irregular pores; about 25 percent pebbles; NaF pH 10.0; strongly acid; clear irregular boundary.
C—28 to 47 inches; dark brown (10YR 4/3) very gravelly clay loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine and medium roots; many fine irregular pores; about 30 percent pebbles and 10 percent cobbles; NaF pH 10.0; strongly acid; abrupt irregular boundary.
R—47 inches; andesite.

The depth to bedrock is 40 to 80 inches. The content of rock fragments in the particle-size control section ranges from 15 to 30 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 to 4 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is gravelly loam or gravelly clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly loam or very gravelly clay loam.

Rober Series

The Rober series consists of very deep, moderately well drained soils formed in volcanic ash and glaciolacustrine sediments. These soils are on mountain back slopes and plateaus. Slopes are 0 to 65 percent. Elevation is 1,000 to 1,800 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 130 to 150 days.

These soils are coarse-silty, mixed, frigid Aquic Haplorthods.

Typical pedon of Rober loam, 0 to 30 percent slopes, in King County, about 1 mile northwest of Humphrey, 1,900 feet south and 1,400 feet west of the northeast corner of sec. 12, T. 20 N., R. 8 E.

Oi—5 to 2 inches; undecomposed needles, leaves, and twigs.

Oa—2 inches to 0; decomposed organic mat; common fine and medium roots.

A—0 to 2 inches; dark brown (7.5YR 3/2) loam, brown (7.5YR 5/2) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine, medium, and coarse roots; many very fine irregular pores; about 2 percent pebbles and 10 percent cinders 2 to 5 millimeters in diameter; NaF pH 11.0; strongly acid; clear smooth boundary.

Bs1—2 to 13 inches; dark brown (7.5YR 4/4) loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine irregular pores; about 2 percent pebbles and 10 percent cinders 2 to 5 millimeters in diameter; NaF pH 11.0; strongly acid; abrupt smooth boundary.

2Bs2—13 to 24 inches; dark yellowish brown (10YR 4/4) loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium roots; common very fine tubular pores; about 5 percent pebbles; NaF pH 11.5; moderately acid; clear smooth boundary.

2Bs3—24 to 30 inches; dark brown (7.5YR 4/4) loam, light yellowish brown (10YR 6/4) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; common very fine tubular pores; about 10 percent pebbles; NaF pH 11.5; moderately acid; abrupt smooth boundary.

2C—30 to 60 inches; grayish brown (2.5Y 5/2) silt loam, light gray (2.5Y 7/2) dry; few fine prominent mottles, strong brown (7.5YR 5/6) moist and dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine roots; few very fine irregular pores; about 5 percent pebbles; NaF pH 11.0; moderately acid.

The thickness of the solum is 20 to 40 inches. The depth to mottles with chroma of 2 or less is 30 inches or more. The content of rock fragments in the control section ranges from 0 to 5 percent.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is loam or silt loam.

The 2C horizon has hue of 2.5Y or 5Y, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is stratified silt loam or silty clay loam below a depth of 40 inches.

Rugles Series

The Rugles series consists of very deep, well drained soils formed in a mixture of lacustrine deposits and tephra. These soils are on dissected terraces. Slopes are 0 to 15 percent. Elevation is 1,700 to 2,400 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 150 to 170 days.

These soils are medial, frigid Entic Dystrandepts.

Typical pedon of Rugles silt loam, 0 to 15 percent slopes, in Pierce County, 150 feet north and 1,320 feet east of the intersection of St. Regis Paper Company Roads 0-501 and 0-500, in sec. 24, T. 17 N., R. 5 E.

Oe—2 inches to 0; duff consisting of partially decomposed twigs and needles; abrupt smooth boundary.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, dark yellowish brown (10YR 4/4) dry; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many fine and very fine and common coarse roots; strongly acid; abrupt wavy boundary.

AB—4 to 11 inches; dark brown (10YR 4/3) silt loam, light yellowish brown (2.5Y 6/4) dry; moderate medium subangular blocky structure parting to moderate medium granular; hard, friable, slightly sticky and slightly plastic; weakly smeary; many fine and very fine roots; strongly acid; abrupt wavy boundary.

Bw1—11 to 16 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate coarse subangular blocky structure parting to moderate medium granular; hard, friable, slightly sticky and slightly plastic; moderately smeary; many fine and very fine roots; strongly acid; clear wavy boundary.

Bw2—16 to 32 inches; grayish brown (10YR 5/2) silt loam, white (2.5Y 8/2) dry; moderate coarse subangular blocky structure; hard, friable, slightly sticky and plastic; weakly smeary; common fine and very fine roots; moderately acid; gradual smooth boundary.

Bw3—32 to 45 inches; grayish brown (10YR 5/2) silt loam, white (2.5Y 8/2) dry; moderate coarse subangular blocky structure; hard, friable, slightly sticky and plastic; moderately smeary; common fine and very fine roots; moderately acid; gradual smooth boundary.

BC—45 to 57 inches; grayish brown (10YR 5/2) silt loam, white (2.5Y 8/2) dry; moderate very coarse subangular blocky structure; hard, friable, slightly sticky and plastic; few thin clay films coating mineral grains; moderately acid; abrupt smooth boundary.

C—57 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam, white (2.5Y 8/2) dry; common fine distinct strong brown (7.5YR 5/6) mottles, reddish yellow (7.5YR 7/6) dry; massive; slightly hard, firm, slightly sticky and plastic; stratified; common very fine discontinuous tubular pores; few thin clay films coating mineral grains; moderately acid.

The thickness of the solum is 40 to 60 inches. The control section is silt loam or silty clay loam and has 0 to 10 percent pebbles.

The A horizon has value of 2 to 6 when moist and dry and chroma of 2 to 4 when moist and dry. The AB horizon has value of 4 or 5 when moist and 5 to 7 when dry and chroma of 2 to 4 when moist and dry. The Bw horizon has value of 4 to 6 when moist and chroma of 2 to 4 when moist. It is silt loam or silty clay loam. It is strongly acid or moderately acid. The C horizon has value of 5 or 6 when moist and 6 to 8 when dry and chroma of 2 or 3 when moist and dry. The content of clay in this horizon is 27 to 35 percent.

Salal Series

The Salal series consists of very deep, moderately well drained soils formed in alluvium. These soils are on flood plains and river terraces. Slopes are 0 to 2 percent. Elevation is 400 to 500 feet. The average annual precipitation is 70 to 80 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 140 to 160 days.

These soils are coarse-silty, mixed, mesic Cumulic Haplumbrepts.

Typical pedon of Salal silt loam, 0 to 2 percent slopes, in King County, about 1 mile north of North Bend, 1,550 feet east and 1,500 feet north of the southwest corner of sec. 4, T. 23 N., R. 8 E.

Ap—0 to 11 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine pores; strongly acid; abrupt smooth boundary.

A1—11 to 18 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and few fine tubular pores; moderately acid; abrupt wavy boundary.

A2—18 to 33 inches; very dark grayish brown (2.5Y 3/2) silt loam, grayish brown (2.5Y 5/2) dry; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots in the upper part and few below a depth of 25 inches; common very fine tubular pores; moderately acid; clear wavy boundary.

AC—33 to 50 inches; very dark grayish brown (2.5Y 3/2) silt loam, light brownish gray (2.5Y 6/2) dry; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; moderately acid; clear wavy boundary.

C—50 to 60 inches; dark grayish brown (2.5Y 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; common fine distinct olive brown (2.5Y 4/4) mottles, very pale brown (10YR 7/4) dry; weak fine granular structure; hard, friable, slightly sticky and plastic;

few roots; common very fine tubular pores; moderately acid.

The umbric epipedon is 20 to 40 inches thick.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 1 or 2 when moist and dry. It is silt loam or very fine sandy loam. Reaction is strongly acid or moderately acid.

The AC horizon has hue of 2.5Y or 10YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 2 or 3 when moist and dry. It is silt loam or very fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 2 to 4 when moist and dry. It is silt loam or very fine sandy loam.

Sauk Series

The Sauk series consists of very deep, well drained soils formed in alluvium containing volcanic ash. These soils are on river terraces. Slopes are 0 to 8 percent. Elevation is 500 to 800 feet. The average annual precipitation is 80 to 90 inches, and the mean annual air temperature is about 49 degrees F. The frost-free period is 145 to 165 days.

These soils are coarse-loamy, mixed, mesic Typic Haplorthods.

Typical pedon of Sauk silt loam, 0 to 8 percent slopes, in King County, about 8 miles east of North Bend, 2,000 feet north and 1,500 feet west of the southeast corner of sec. 10, T. 23 N., R. 9 E.

Oi—1.5 inches to 1 inch; undecomposed needles, leaves, and twigs.

Oa—1 inch to 0; decomposed organic mat.

A—0 to 6 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine, common fine, and few medium and coarse roots; many very fine tubular pores; NaF pH 11.0; strongly acid; abrupt wavy boundary.

Bs1—6 to 10 inches; dark brown (7.5YR 3/4) silt loam, dark brown (7.5YR 4/4) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and few medium and coarse roots; many very fine and common fine tubular pores; NaF pH 12.0; moderately acid; abrupt wavy boundary.

Bs2—10 to 22 inches; dark yellowish brown (10YR 4/4) fine sandy loam, light yellowish brown (10YR 6/4) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and few medium and coarse roots; many very fine and common fine tubular pores; NaF pH 12.0; moderately acid; clear wavy boundary.

Bs3—22 to 34 inches; olive brown (2.5Y 4/4) fine sandy loam, light yellowish brown (2.5Y 6/4) dry; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine, medium, and coarse roots; common very fine and few fine tubular pores; NaF pH 11.5; slightly acid; clear wavy boundary.

BC—34 to 42 inches; dark brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; weakly smeary; few fine, medium, and coarse roots; common very fine and few fine tubular pores; NaF pH 11.5; slightly acid; abrupt smooth boundary.

2C—42 to 60 inches; olive brown (2.5Y 4/4) very gravelly loamy sand, light yellowish brown (2.5Y 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many fine irregular pores; about 50 percent pebbles; NaF pH 11.5; slightly acid.

Depth to the C horizon ranges from 40 to 60 inches. The content of rock fragments in the particle-size control section ranges from 0 to 10 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 or 4 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It is silt loam, fine sandy loam, or very fine sandy loam.

The BC horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. It is sandy loam, fine sandy loam, or very fine sandy loam.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is sandy loam, loamy sand, sand, gravelly loamy sand, gravelly sandy loam, very gravelly loamy sand, or very gravelly sand.

Scamman Series

The Scamman series consists of very deep, somewhat poorly drained soils formed in glacial and sedimentary material. These soils are on terraces and on back slopes in the foothills. Slopes are 6 to 65 percent. Elevation is 800 to 1,700 feet. The average

annual precipitation is 40 to 70 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 165 to 185 days.

These soils are fine, mixed, mesic Aquic Palexeralfs.

Typical pedon of Scamman silt loam, 6 to 15 percent slopes, in Pierce County, about 5 miles south of Kapowsin, 2,300 feet north and 2,400 feet east of the southwest corner of sec. 31, T. 17 N., R. 5 E.

Oi—4 to 3 inches; undecomposed needles, leaves, and twigs.
Oa—3 inches to 0; decomposed organic mat.
A—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine and common medium and coarse roots; few very fine irregular and tubular pores; moderately acid; abrupt smooth boundary.
E—6 to 14 inches; light brownish gray (2.5Y 6/2) silt loam, light gray (10YR 7/2) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; many very fine irregular and common very fine tubular pores; moderately acid; abrupt wavy boundary.
Bt1—14 to 27 inches; grayish brown (2.5Y 5/2) silty clay, light gray (5Y 7/2) dry; many medium prominent yellowish brown (10YR 5/6) mottles, reddish yellow (7.5YR 6/8) dry; moderate medium angular blocky structure; very hard, very firm, sticky and plastic; few fine roots; many very fine irregular and few fine tubular pores; many moderately thick clay films in pores and on faces of peds; moderately acid; clear smooth boundary.
Bt2—27 to 60 inches; dark grayish brown (10YR 4/2) silty clay, light gray (5Y 7/2) dry; common medium prominent yellowish brown (10YR 5/6) mottles, reddish yellow (7.5YR 6/8) dry; moderate medium angular blocky structure; very hard, very firm, sticky and plastic; many very fine irregular and few very fine tubular pores; many moderately thick clay films in pores and on faces of peds; slightly acid.

The content of clay in the control section ranges from 40 to 60 percent.

The A horizon has value of 3 or 4 when moist and 4 to 6 when dry and chroma of 3 or 4 when moist and dry.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 or 7 when dry, and chroma of 2 or 3 when moist and dry. It is silt loam or silty clay loam.

The Bt horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5 when moist and 6 to 8 when dry, and chroma of 1 or 2 when moist and dry. It is silty clay or clay.

Seattle Series

The Seattle series consists of very deep, very poorly drained soils formed in herbaceous and woody organic deposits. These soils are in river valleys and on glacial till plains. Slopes are 0 to 1 percent. Elevation is 300 to 800 feet. The average annual precipitation is 40 to 50 inches, and the mean annual air temperature is 50 degrees F. The frost-free period is 160 to 180 days.

These soils are euic, mesic Hemic Medisaprists.

Typical pedon of Seattle muck, 0 to 1 percent slopes, in King County, about 7 miles south of Monroe, 1,800 feet north and 1,300 feet east of the southwest corner of sec. 7, T. 26 N., R. 7 E.

Oap—0 to 8 inches; dark brown (7.5YR 4/3) muck, brown (7.5YR 5/3) dry; moderate medium granular structure; very hard, friable, nonsticky and nonplastic; many very fine and fine roots; about 10 percent fiber before rubbing and 5 percent after rubbing; moderately acid; clear smooth boundary.
Oe1—8 to 15 inches; dark brown (7.5YR 3/4) hemic material, brown (7.5YR 5/4) dry; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; about 70 percent fiber before rubbing and 17 percent after rubbing; moderately acid; clear smooth boundary.
Oe2—15 to 31 inches; black (5YR 2/1) sapric material, dark reddish brown (5YR 2/2) dry; massive; hard, very friable, nonsticky and nonplastic; common fine roots; about 60 percent fiber before rubbing and 10 percent after rubbing; strongly acid; clear smooth boundary.
Oa—31 to 37 inches; black (5YR 2/1) sapric material, dark reddish brown (5YR 2/2) dry; massive; hard, very friable, nonsticky and nonplastic; about 60 percent fiber before rubbing and 5 percent after rubbing; strongly acid; clear smooth boundary.
O'e—37 to 60 inches; black (5YR 2/1) and dark brown (7.5YR 3/2) hemic material, dark reddish brown (5YR 3/2) and dark brown (7.5YR 3/3) dry; massive; slightly hard, very friable, nonsticky and nonplastic; about 50 percent fiber before rubbing and 17 percent after rubbing; strongly acid.

These soils consist of stratified, hemic and sapric material. The content of fiber in the control section ranges from 50 to 70 percent before rubbing and from 5 to 20 percent after rubbing.

The Oa and Oe horizons have hue of 5YR or 7.5YR, value of 2 or 3 when moist and 2 to 5 when dry, and chroma of 1 to 4 when moist and dry.

Serene Series

The Serene series consists of well drained soils formed in a mixture of volcanic ash, pumice, and colluvium derived from granitic and metamorphic rocks. These soils are moderately deep to weathered bedrock. They are on mountain ridge crests and back slopes. Slopes are 8 to 90 percent. Elevation is 3,600 to 6,000 feet. The average annual precipitation is 95 to 100 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 90 to 110 days.

These soils are sandy-skeletal, mixed Humic Cryorthods.

Typical pedon of Serene gravelly sandy loam, 8 to 30 percent slopes, in King County, in the upper Hansen Creek drainage, about 100 feet south of a spur off Forest Service Road 2291A, about 1,980 feet west and 1,100 feet north of the southeast corner of sec. 21, T. 22 N., R. 10 E.

Oi—2 inches to 0; loose forest litter, including needles, twigs, bark, and moss.

E—0 to 2 inches; brown (7.5YR 5/2) loamy sand (volcanic ash and pumice), pinkish gray (7.5YR 6/2) dry; weak fine granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine roots; many very fine and fine interstitial pores; NaF pH 9.2; very strongly acid; abrupt wavy boundary.

Bhs1—2 to 3 inches; dark brown (7.5YR 3/2) gravelly sandy loam, dark brown (7.5YR 3/4) dry; moderate coarse granular structure; slightly hard, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; many very fine and fine interstitial pores; about 20 percent gravel and hard cinders; NaF pH 12.0+; moderately acid; gradual wavy boundary.

Bhs2—3 to 6 inches; dark reddish brown (5YR 3/3) very gravelly sandy loam, strong brown (7.5YR 4/6) dry; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; moderately smeary; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; about 40 percent gravel and hard cinders; NaF pH 12.0+; moderately acid; gradual wavy boundary.

Bs—6 to 14 inches; dark yellowish brown (10YR 4/6) very gravelly loamy sand, yellowish brown (10YR 5/6) dry; dark reddish brown (5YR 3/2) stains on coarse fragments; massive; hard, friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many fine and medium interstitial pores; about 45 percent gravel and 5 percent cobbles; NaF pH 11.5; moderately acid; abrupt wavy boundary.

BC—14 to 30 inches; olive brown (2.5Y 4/4) extremely cobbly coarse sand, pale yellow (2.5Y 7/4) dry; massive; slightly hard, friable, nonsticky and nonplastic; many fine and medium interstitial pores; about 20 percent gravel and 45 percent cobbles; NaF pH 11.5; moderately acid; gradual smooth boundary.

Cr—30 inches; grayish brown (2.5Y 5/2), highly weathered granodiorite that breaks to very gravelly coarse sand, light brownish gray (2.5Y 6/2) dry; can be dug by a spade with difficulty; about 70 percent hard gravel; moderately acid.

The depth to bedrock is 20 to 40 inches. The content of rock fragments, including hard cinders, in the control section is 35 to 70 percent by volume.

The E horizon has hue of 5YR or 7.5YR or is neutral in hue. It has value of 5 to 7 when moist and 6 to 8 when dry and chroma of 0 to 2 when moist and dry. Reaction is moderately acid to very strongly acid.

The Bhs horizon has hue of 2.5YR, 5YR, or 7.5YR when moist and 5YR or 7.5YR when dry, value of 2 to 5 when moist and 3 to 6 when dry, and chroma of 2 to 6 when moist and 4 to 6 when dry. It is sandy loam or loam in the fine-earth fraction. It has 15 to 55 percent coarse fragments, including hard cinders. Reaction is slightly acid to very strongly acid.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is loamy sand or sandy loam in the fine-earth fraction. It has 30 to 60 percent coarse fragments by volume. Reaction is slightly acid to strongly acid.

The BC horizon has hue of 10YR or 2.5Y, value of 4 to 7 when moist and dry, and chroma of 2 to 6 when moist and dry. It has 40 to 75 percent coarse fragments by volume. Reaction is slightly acid to strongly acid.

Shalcar Series

The Shalcar series consists of very deep, very poorly drained soils formed in herbaceous and woody organic deposits overlying alluvium and glaciofluvial deposits. These soils are in depressions on outwash terraces, till plains, and stream terraces. Slopes are 0 to 1 percent. Elevation is 200 to 700 feet. The average annual precipitation is 35 to 60 inches, and the mean annual

air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are loamy, mixed, euic, mesic Terric Medisaprists.

Typical pedon of Shalcar muck, 0 to 1 percent slopes, in King County, about 5 miles east of Buckley, 900 feet north and 2,200 feet west of the southeast corner of sec. 33, T. 20 N., R. 7 E.

Oa1—0 to 2 inches; very dark brown (10YR 2/2) muck, very dark grayish brown (10YR 3/2) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; many fine irregular pores; about 50 percent fiber before rubbing and 15 percent after rubbing; moderately acid; abrupt smooth boundary.

Oa2—2 to 10 inches; very dark brown (10YR 2/2) muck, very dark grayish brown (10YR 3/2) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; about 20 percent fiber before rubbing and 5 percent after rubbing; moderately acid; abrupt smooth boundary.

Oa3—10 to 16 inches; black (10YR 2/1) sapric material, very dark brown (10YR 2/2) dry; moderate medium granular structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; about 40 percent fiber before rubbing and 15 percent after rubbing; moderately acid; clear smooth boundary.

Oa4—16 to 20 inches; very dark brown (10YR 2/2) sapric material, very dark grayish brown (10YR 3/2) dry; moderate medium granular structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; many fine irregular pores; moderately acid; abrupt smooth boundary.

2C—20 to 60 inches; dark grayish brown (10YR 4/2) sandy loam, grayish brown (10YR 5/2) dry; massive; slightly hard, friable, nonsticky and nonplastic; many fine irregular pores; slightly acid.

The organic material is 16 to 51 inches thick. The fiber in this material is derived mainly from grasses and sedges, but some pedons contain as much as 10 percent wood fragments. The content of fiber ranges from 5 to 50 percent before rubbing and from 2 to 15 percent after rubbing. The Oa horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 2 to 4 when dry, and chroma of 1 or 2 when moist and dry.

The 2C horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 1 or 2 when moist and dry. It is loam, silt loam, or sandy loam. Some pedons are underlain by a sandy 3C horizon.

Si Series

The Si series consists of very deep, moderately well drained soils formed in alluvium. These soils are on river terraces. Slopes are 0 to 2 percent. Elevation is 400 to 500 feet. The average annual precipitation is 70 to 80 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 140 to 160 days.

These soils are coarse-silty, mixed, nonacid, mesic Typic Udifluvents.

Typical pedon of Si silt loam, 0 to 2 percent slopes, in King County, about 2 miles north of North Bend, 1,650 feet south and 2,540 feet east of the northwest corner of sec. 34, T. 24 N., R. 8 E.

Ap—0 to 11 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; strong medium and coarse granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular pores; moderately acid; abrupt smooth boundary.

Bw—11 to 22 inches; olive brown (2.5Y 4/4) silt loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; many very fine irregular and common fine tubular pores; moderately acid; abrupt smooth boundary.

C1—22 to 39 inches; light olive brown (2.5Y 5/4), stratified silt loam and fine sandy loam, light yellowish brown (2.5Y 6/4) and light gray (2.5Y 7/2) dry; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; many very fine irregular and common fine tubular pores; moderately acid; clear wavy boundary.

C2—39 to 60 inches; olive brown (2.5Y 4/4) and grayish brown (2.5Y 5/2), stratified silt loam and fine sandy loam, light yellowish brown (2.5Y 6/4) and light gray (2.5Y 7/2) dry; massive; soft, very friable, nonsticky and nonplastic; very few very fine tubular pores; few roots; moderately acid.

The Ap horizon has hue of 10YR or 2.5Y, value of 5 or 6 when dry, and chroma of 2 or 3 when moist and dry. The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. The C horizon has hue of 2.5Y or 5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry. It is dominantly stratified silt loam and fine sandy loam. In some pedons, however, it has some thin strata of loamy fine sand or fine sand. It is moderately acid or slightly acid.

Skykomish Series

The Skykomish series consists of very deep, somewhat excessively drained soils formed in a mixture of volcanic ash and glacial outwash. These soils are on terraces and escarpments. Slopes are 0 to 65 percent. Elevation is 1,000 to 1,800 feet. The average annual precipitation is 50 to 80 inches, and the mean annual air temperature is about 45 degrees F. The frost-free period is 120 to 140 days.

These soils are sandy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Skykomish gravelly sandy loam, 0 to 30 percent slopes, in King County, about 5 miles east of North Bend, 1,000 feet west and 600 feet north of the southeast corner of sec. 4, T. 23 N., R. 9 E.

Oi—2 inches to 0.5 inch; undecomposed needles, leaves, and twigs.
Oa—0.5 inch to 0; decomposed organic mat.
A—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, dark brown (10YR 4/3) dry; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium roots; many fine irregular pores; about 15 percent pebbles; moderately acid; abrupt smooth boundary.
Bs1—6 to 10 inches; reddish brown (5YR 4/4) gravelly sandy loam, yellowish red (5YR 5/6) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and common fine and medium roots; many fine irregular pores; about 20 percent pebbles; moderately acid; abrupt irregular boundary.
Bs2—10 to 15 inches; yellowish red (5YR 4/6) very gravelly sandy loam, reddish yellow (5YR 6/6) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and common fine and medium roots; many fine irregular pores; about 35 percent pebbles; moderately acid; clear irregular boundary.
Bs3—15 to 24 inches; dark brown (7.5YR 4/4) very gravelly loamy sand, reddish yellow (7.5YR 6/6) dry; single grain; loose; many very fine and common fine and medium roots; about 45 percent pebbles and 10 percent cobbles; moderately acid; abrupt wavy boundary.
2C1—24 to 32 inches; dark grayish brown (10YR 4/2) extremely gravelly coarse sand, pale brown (10YR 6/3) dry; massive; hard, very firm, nonsticky and nonplastic; few very fine and fine roots; many fine irregular pores; about 50 percent pebbles and 10 percent cobbles; moderately acid; abrupt wavy boundary.
2C2—32 to 60 inches; dark brown (10YR 4/3) extremely gravelly coarse sand, light yellowish brown (10YR 6/4) dry; single grain; loose; few very fine and fine roots; many fine irregular pores; about 60 percent pebbles and 10 percent cobbles; moderately acid.

The thickness of the solum is 14 to 30 inches. The content of rock fragments ranges from 35 to 50 percent in the upper part of the particle-size control section and from 60 to 80 percent in the lower part. Some pedons have 10 to 20 percent stones on the surface and throughout the profile.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 4 to 6 when moist and dry. It is dominantly gravelly loam, gravelly sandy loam, very gravelly loam, very gravelly sandy loam, or very stony sandy loam. In some pedons, however, the Bs3 horizon is very gravelly loamy sand.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. It is extremely gravelly loamy sand, extremely gravelly sand, extremely gravelly coarse sand, or extremely stony sand.

Snoqualmie Series

The Snoqualmie series consists of very deep, somewhat excessively drained soils formed in gravelly alluvium. These soils are on low river terraces. Slopes are 0 to 8 percent. Elevation is 800 to 1,700 feet. The average annual precipitation is 50 to 90 inches, and the mean annual air temperature is about 48 degrees F. The frost-free period is 150 to 170 days.

These soils are sandy-skeletal, mixed, mesic Dystric Xerorthents.

Typical pedon of Snoqualmie loamy fine sand, 0 to 8 percent slopes, in King County, about 10 miles east of Enumclaw, 1,800 feet west and 1,250 feet south of the northeast corner of sec. 3, T. 19 N., R. 8 E.

Oi—1 inch to 0; undecomposed needles, leaves, and twigs; abrupt smooth boundary.
A—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark grayish brown (10YR 4/2) dry; single grain; loose; many very fine, fine, and medium and common coarse roots; moderately acid (pH 6.0); abrupt smooth boundary.

2C1—8 to 36 inches; very dark gray (10YR 3/1) extremely gravelly coarse sand, dark gray (N 4/0) dry; single grain; loose; common fine, medium, and coarse and few very fine roots; about 50 percent pebbles and 20 percent cobbles; moderately acid; abrupt smooth boundary.

2C2—36 to 60 inches; very dark gray (10YR 3/1) extremely cobbly coarse sand, dark gray (N 4/0) dry; single grain; loose; about 40 percent pebbles and 25 percent cobbles; slightly acid.

Depth to the 2C horizon is 6 to 20 inches. The particle-size control section has 40 to 70 percent rock fragments. The control section is extremely gravelly or extremely cobbly coarse sand. The upper 40 inches has hue of 10YR or 7.5YR or is neutral in hue. It has value of 2 to 4 when moist and 4 or 5 when dry and chroma of 1 to 3 when moist and 0 to 2 when dry.

Spukwush Series

The Spukwush series consists of very deep, well drained soils formed in volcanic ash and cinders over highly weathered tuffaceous material. These soils are in mountainous slump areas. Slopes are 8 to 30 percent. Elevation is 2,700 to 4,000 feet. The average annual precipitation is 70 to 100 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 110 to 130 days.

These soils are ashy over loamy, mixed Typic Cryorthods.

Typical pedon of Spukwush loamy sand, 8 to 30 percent slopes, in King County, 1,000 feet north and 1,200 feet east of the southwest corner of sec. 17, T. 19 N., R. 10 E.

A—0 to 2 inches; brown (7.5YR 4/4) loamy sand (volcanic ash and pumice), pinkish gray (7.5YR 6/2) dry; single grain; loose, nonsticky and nonplastic; few medium and coarse and common very fine and fine roots; about 10 percent cinders 2 to 6 millimeters in diameter; strongly acid; abrupt smooth boundary.

Bs1—2 to 4 inches; strong brown (7.5YR 5/6) loamy sand (volcanic ash and pumice), light yellowish brown (10YR 6/4) dry; single grain; loose, nonsticky and nonplastic; few medium and coarse and common very fine and fine roots; about 15 percent cinders 2 to 6 millimeters in diameter; strongly acid; abrupt smooth boundary.

Bs2—4 to 7 inches; strong brown (7.5YR 5/6) and pale brown (10YR 6/3) loamy sand (volcanic ash and pumice), variegated strong brown (7.5YR 5/6) and white (10YR 8/1) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; few medium and common very fine and fine roots; about 5 percent cinders 2 to 6 millimeters in diameter and 5 percent pebbles; strongly acid; clear smooth boundary.

Bs3—7 to 15 inches; brown (10YR 5/3) very cindery sandy loam (volcanic ash and pumice), very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; few medium and coarse and common fine roots; about 20 percent pebbles and 30 percent cinders 2 to 6 millimeters in diameter; strongly acid; abrupt smooth boundary.

2Bsb1—15 to 30 inches; yellowish brown (10YR 5/4) loam, very pale brown (10YR 8/3) dry; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; few very fine and fine irregular pores; about 3 percent pebbles; moderately acid; clear smooth boundary.

2Bsb2—30 to 36 inches; light yellowish brown (10YR 6/4) loam, very pale brown (10YR 8/3) dry; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; yellowish brown (10YR 5/8) and light gray (10YR 7/2) bands, reddish yellow (7.5YR 6/8) dry; few very fine and fine irregular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

2Cb1—36 to 39 inches; light yellowish brown (10YR 6/4) loam that has white (10YR 8/1) and very pale brown (10YR 7/3) bands when dry; white (10YR 8/1) flakes; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine random tubular and irregular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

2Cb2—39 to 60 inches; light yellowish brown (10YR 6/4) gravelly loam, very pale brown (10YR 8/3) dry; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine random, tubular and irregular pores; about 20 percent pebbles; slightly acid.

The solum is 24 to 40 inches thick. The lower part of the control section ranges from 15 to 30 percent rock fragments and from 18 to 27 percent clay. The ashy material is 14 to 24 inches thick.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 6 or 7 when dry, and chroma of 1 to 4 when moist and 1 or 2 when dry.

The Bs horizon has matrix colors with hue of 7.5YR or 10YR, value of 4 to 6 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is loamy sand or sandy loam in the fine-earth fraction. It has 5 to 30 percent pumice and cinders.

The 2Bsb horizon is loam or clay loam. It has 2 to 15 percent pebbles.

The 2Cb horizon has hue of 7.5YR or 10YR, value of 4 to 6 when moist and 7 or 8 when dry, and chroma of 1 to 4 when moist and dry. It has 5 to 25 percent pebbles. Reaction is slightly acid or moderately acid.

Stahl Series

The Stahl series consists of well drained soils formed in a mixture of volcanic ash and residuum and colluvium derived from andesite or breccia and tuff. These soils are moderately deep to bedrock. They are on mountain back slopes. Slopes are 15 to 65 percent. Elevation is 2,700 to 4,700 feet. The average annual precipitation is 80 to 100 inches, and the mean annual air temperature is about 42 degrees F. The frost-free period is 140 to 160 days.

These soils are medial-skeletal Andic Cryumbrepts.

Typical pedon of Stahl very gravelly silt loam, 30 to 65 percent slopes, in Pierce County, about 5.5 miles southeast of Ohop, 2,800 feet east and 700 feet north of the southwest corner of sec. 6, T. 16 N., R. 6 E.

Oi—4 inches to 0; undecomposed needles, twigs, bark, and leaves.

A—0 to 8 inches; dark brown (10YR 3/3) very gravelly silt loam, brown (10YR 5/3) dry; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 25 percent pebbles and 10 percent cobbles; strongly acid; clear smooth boundary.

Bw—8 to 15 inches; dark brown (10YR 4/3) very gravelly silt loam, light yellowish brown (10YR 6/4) dry; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 35 percent pebbles, 10 percent cobbles, and 10 percent stones; strongly acid; clear smooth boundary.

C—15 to 29 inches; dark brown (10YR 4/3) extremely cobbly silty clay loam, pale brown (10YR 6/3) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; many fine irregular pores; about 40 percent pebbles and 30 percent cobbles; moderately acid; abrupt smooth boundary.

R—29 inches; andesite.

The depth to bedrock is 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 60 to 80 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is very gravelly silt loam or very gravelly silty clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 3 or 4 when moist and dry. It is extremely cobbly silt loam or extremely cobbly silty clay loam.

Sulsavar Series

The Sulsavar series consists of very deep, well drained soils formed in volcanic ash and alluvium. These soils are on alluvial fans and terraces. Slopes are 0 to 8 percent. Elevation is 1,100 to 1,500 feet. The average annual precipitation is 45 to 75 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 140 to 160 days.

These soils are coarse-loamy, mixed, mesic Typic Haplorthods.

Typical pedon of Sulsavar loam, 0 to 8 percent slopes, in King County, about 2 miles northeast of the Eagle Gorge Reservoir Dam, 1,500 feet west and 400 feet south of the northeast corner of sec. 22, T. 21 N., R. 8 E.

Oi—2 inches to 0; undecomposed needles, leaves, twigs, and bark.

A1—0 to 12 inches; dark brown (7.5YR 4/4) loam, brown (7.5YR 5/4) dry; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine, fine, medium, and coarse roots; many very fine irregular pores; about 2 percent pebbles; moderately acid; gradual smooth boundary.

A2—12 to 28 inches; dark brown (7.5YR 3/4) loam, dark brown (7.5YR 4/4) dry; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine, fine, and medium and few coarse roots; many very fine irregular pores; about 5 percent pebbles; slightly acid; clear smooth boundary.

Bs—28 to 47 inches; yellowish brown (10YR 5/4) sandy loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 5 percent pebbles; slightly acid; abrupt smooth boundary.

2C1—47 to 51 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) loam, light

yellowish brown (10YR 6/4) dry; massive; slightly hard, friable, nonsticky and nonplastic; weakly smeary; many very fine irregular pores; about 10 percent pebbles; slightly acid; abrupt smooth boundary.

3C2—51 to 60 inches; dark brown (10YR 3/3) and dark yellowish brown (10YR 4/4) very gravelly loam, yellowish brown (10YR 5/4) dry; massive; slightly hard, friable, nonsticky and nonplastic; weakly smeary; many very fine irregular pores; about 55 percent pebbles; slightly acid.

The content of rock fragments ranges from 5 to 15 percent in the particle-size control section and from 15 to 50 percent below a depth of 40 inches.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 3 to 5 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is silt loam, loam, sandy loam, or gravelly loam.

The 2C and 3C horizons have hue of 10YR or 2.5Y, value of 3 to 5 when moist and 5 or 6 when dry, and chroma of 2 to 4 when moist and dry. They are stratified loam to very gravelly loamy sand.

Sultan Series

The Sultan series consists of very deep, moderately well drained soils formed in alluvium. These soils are on river terraces. Slopes are 0 to 2 percent. Elevation is 50 to 120 feet. The average annual precipitation is 35 to 55 inches, and the mean annual air temperature is 50 degrees F. The frost-free period is 165 to 185 days.

These soils are fine-silty, mixed, nonacid, mesic Aquic Xerofluvents.

Typical pedon of Sultan silt loam, 0 to 2 percent slopes, in King County, about 1 mile north of Carnation, 2,140 feet west and 250 feet north of the southeast corner of sec. 9, T. 25 N., R. 7 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; hard, firm, sticky and plastic; many roots; slightly acid; abrupt smooth boundary.

Bw1—9 to 21 inches; yellowish brown (10YR 5/4) silty clay loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure; hard, friable, sticky and plastic; many roots; slightly acid; clear wavy boundary.

Bw2—21 to 24 inches; light olive brown (2.5Y 5/4) silt loam, pale yellow (2.5Y 7/4) dry; many medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common roots; neutral; clear wavy boundary.

Bg—24 to 48 inches; grayish brown (2.5Y 5/2) silty clay loam, white (2.5Y 8/2) dry; many medium prominent yellowish brown (10YR 5/8) mottles; moderate medium prismatic structure; slightly hard, very friable, sticky and plastic; few roots; neutral; clear wavy boundary.

Cg—48 to 60 inches; olive gray (5Y 5/2) very fine sandy loam stratified with sand; light gray (2.5Y 7/2) dry; common fine prominent yellowish red (5YR 4/6) mottles; massive; slightly hard, very friable; few roots; very strongly acid.

The Ap horizon has value of 3 or 4 when moist and 5 or 6 when dry and chroma of 2 or 3 when moist and dry. Reaction is slightly acid or neutral.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. It is silt loam or silty clay loam. Reaction is slightly acid or neutral.

The Bg horizon has hue of 5Y or 2.5Y, value of 4 to 7 when moist and 5 to 8 when dry, and chroma of 1 or 2 when moist and dry. It is silt loam, very fine sandy loam, or silty clay loam. Reaction is slightly acid or neutral.

The Cg horizon has hue of 5Y or 2.5Y or is neutral in hue. It has value of 4 to 7 when moist and 5 to 8 when dry and chroma of 0 to 2 when moist and dry. It is stratified silt loam to sand. Reaction is very strongly acid to neutral.

Teneriffe Series

The Teneriffe series consists of deep and very deep, well drained soils formed in volcanic ash and pumice over colluvium derived from granitic and low-grade metamorphic rocks. These soils are on mountain back slopes. Slopes are 8 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 90 to 130 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 135 to 155 days.

These soils are sandy-skeletal, mixed, frigid Typic Haplorthods.

Typical pedon of Teneriffe loamy sand, 30 to 60 percent slopes, in King County, along Forest Service Road 2218A, about 1,200 feet west and 200 feet south of the northeast corner of sec. 7, T. 22 N., R. 10 E.

Oi—3 to 2 inches; moss, needles, and twigs.

Oa—2 inches to 0; decomposed forest litter.

E—0 to 1 inch; brown (7.5YR 4/2) loamy sand, pinkish gray (7.5YR 6/2) dry; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; many very fine and fine and common medium roots; about 5 percent subangular pebbles; NaF pH less than 9.2; strongly acid; abrupt smooth boundary.

Bhs—1 to 11 inches; dark brown (7.5YR 3/4) loamy sand (volcanic ash and pumice), brown (7.5YR 5/4) dry; weak very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; many very fine and fine and common medium and coarse roots; about 10 percent subangular pebbles; NaF pH 12.0+; moderately acid; gradual wavy boundary.

2Bs—11 to 21 inches; strong brown (7.5YR 4/6) gravelly loamy sand, reddish yellow (7.5YR 6/6) dry; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; many very fine, common fine, and few medium roots; about 20 percent subangular pebbles and 5 percent cobbles; NaF pH 11.5; moderately acid; clear wavy boundary;

2BC1—21 to 26 inches; olive brown (2.5Y 4/4) very gravelly loamy sand, pale yellow (2.5Y 7/4) dry; weak very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine roots; about 30 percent pebbles and 5 percent cobbles; NaF pH 11.0; moderately acid; clear wavy boundary.

2BC2—26 to 37 inches; light olive brown (2.5Y 5/4) very gravelly loamy sand, pale yellow (2.5Y 8/4) dry; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common very fine and few coarse roots; about 40 percent pebbles and 5 percent cobbles; NaF pH 10.5; moderately acid; clear wavy boundary.

2C—37 to 60 inches; light yellowish brown (10YR 6/4) very gravelly coarse sand, very pale brown (10YR 8/3) dry; massive; slightly hard, friable, nonsticky and nonplastic; nonsmeary; few very fine roots; about 55 percent pebbles; NaF pH 10.0; slightly acid.

In some areas weathered shale is at a depth of 40 to 60 inches. The content of rock fragments, including hard cinders, in the particle-size control section ranges from 35 to 60 percent by volume.

The E horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 to 6 when moist and 6 to 8 when dry, and chroma of 1 or 2 when moist and dry.

The Bhs horizon has hue of 5YR or 7.5YR, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 4 to 6 when moist and dry. The content of rock fragments is 10 to 30 percent by volume. Reaction is strongly acid or moderately acid.

The 2Bs horizon has value of 4 or 5 when moist and 6 or 7 when dry and chroma of 4 to 6 when moist and dry. The content of rock fragments is 25 to 40 percent by volume. Reaction is strongly acid or moderately acid.

The 2BC horizon has hue of 10YR or 2.5Y, value of 4 to 6 when moist and 7 or 8 when dry, and chroma of 3 or 4 when moist and dry. The content of rock fragments is 35 to 60 percent by volume. Reaction is slightly acid or moderately acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 5 or 6 when moist and 6 to 8 when dry, and chroma of 2 to 4 when moist and dry. It is loamy sand, sand, or coarse sand in the fine-earth fraction. It has 50 to 70 percent rock fragments by volume. Reaction is slightly acid or moderately acid.

Tokul Series

The Tokul series consists of moderately well drained soils formed in a mixture of volcanic ash and dense glacial till. These soils are moderately deep to ortstein. They are on mountain foot slopes and in valleys. Slopes are 0 to 90 percent. Elevation is 600 to 1,100 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are coarse-loamy, mixed, mesic, ortstein Typic Haplorthods.

Typical pedon of Tokul gravelly loam, 6 to 15 percent slopes, in King County, about 5 miles east of Maple Valley, 1,000 feet south and 200 feet east of the northwest corner of sec. 17, T. 22 N., R. 7 E.

Oi—0.5 inch to 0; undecomposed needles and leaves.

A—0 to 3 inches; very dark brown (10YR 2/2) gravelly loam, dark brown (10YR 4/3) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; few very fine tubular pores; about 30 percent pebbles; strongly acid; clear wavy boundary.

Bs1—3 to 9 inches; dark yellowish brown (10YR 3/4) gravelly loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common fine roots; few very fine tubular pores; about 30 percent pebbles; strongly acid; clear wavy boundary.

Bs2—9 to 19 inches; dark yellowish brown (10YR 3/4)

gravelly loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; common very fine tubular pores; about 30 percent pebbles; strongly acid; gradual wavy boundary.

Bs3—19 to 31 inches; dark yellowish brown (10YR 3/4) gravelly loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium roots; common fine tubular pores; strongly acid; gradual wavy boundary.

BC—31 to 37 inches; dark yellowish brown (10YR 4/4) gravelly fine sandy loam, light yellowish brown (2.5Y 6/4) dry; massive; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few very fine and fine roots; common fine tubular pores; about 30 percent pebbles; moderately acid; gradual wavy boundary.

2Bsm—37 to 60 inches; dark grayish brown (2.5Y 4/2) ortstein that crushes to very gravelly sandy loam, light brownish gray (2.5Y 6/2) dry; massive; hard, firm, nonsticky and nonplastic; about 50 percent pebbles; moderately acid.

Depth to the 2Bsm horizon is 20 to 40 inches. The content of rock fragments in the particle-size control section ranges from 15 to 35 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 4 to 6 when dry, and chroma of 1 to 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 to 6 when moist and 4 to 7 when dry, and chroma of 4 to 6 when moist and dry. It is gravelly loam, gravelly silt loam, or gravelly fine sandy loam.

The BC horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6 when moist and 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. It is gravelly sandy loam, gravelly fine sandy loam, or gravelly loam.

The 2Bsm horizon is ortstein that crushes to gravelly loam, gravelly sandy loam, very gravelly loam, or very gravelly sandy loam. It has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 2 to 4 when moist and dry.

Treen Series

The Treen series consists of well drained soils formed in a mixture of volcanic ash and material weathered from a wide variety of rocks. These soils are shallow to bedrock. They are on high mountain slopes and ridge crests. Slopes are 30 to 90 percent. Elevation is 3,200 to 5,000 feet. The average annual precipitation is 70 to 130 inches, and the mean annual air temperature is about 40 degrees F. The frost-free period is 80 to 100 days.

These soils are medial Lithic Cryandepts.

Typical pedon of Treen loam, 30 to 90 percent slopes, in King County, near Captain Point, 800 feet north and 2,500 feet west of the southeast corner of sec. 6, T. 26 N., R. 13 E.

Oi—2 inches to 0; matted herbaceous material; fibrous.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; moderately smeary; many very fine and fine roots; common very fine irregular pores; about 10 percent pebbles; about 25 percent organic fiber by volume; moderately acid; NaF pH 10.5; abrupt smooth boundary.

A2—5 to 14 inches; dark brown (7.5YR 3/2) sandy loam, brown (7.5YR 4/2) dry; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, medium, and coarse roots; common fine irregular pores; about 10 percent pebbles; strongly acid; NaF pH 12.0; clear smooth boundary.

Bw—14 to 18 inches; brown (7.5YR 5/4) gravelly sandy loam, light yellowish brown (10YR 6/4) dry; weak medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; common fine irregular pores; about 25 percent pebbles; moderately acid; NaF pH 11.5; abrupt smooth boundary.

R—18 inches; schist.

The depth to metamorphic or granitic bedrock is 14 to 20 inches. Reaction is moderately acid or strongly acid throughout the profile. The bulk density in the A1 and A2 horizons is estimated to be less than 0.85 grams per cubic centimeter.

The A1 horizon has hue of 10YR or 7.5YR, value of 4 or 5 when dry, and chroma of 2 or 3 when dry. It has 0 to 10 percent coarse volcanic ash.

The A2 horizon has hue of 7.5YR or 10YR and chroma of 2 or 3 when dry. It is sandy loam or loam in the fine-earth fraction. It has 0 to 10 percent coarse volcanic ash and 10 to 25 percent pebbles.

The Bw horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6 when moist and 5 to 7 when dry, and chroma of 2 to 6 when moist and dry. It is loam, gravelly sandy loam, or gravelly fine sandy loam. It has 10 to 30 percent coarse fragments.

Tukwila Series

The Tukwila series consists of very deep, very poorly drained soils formed in herbaceous and woody organic deposits stratified with mineral layers. These soils are in depressions on stream terraces. Slopes are 0 to 1 percent. Elevation is 100 to 500 feet. The average annual precipitation is 40 to 50 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 160 to 180 days.

These soils are diatomaceous, dysic, mesic Limnic Medisaprists.

Typical pedon of Tukwila muck, 0 to 1 percent slopes, in King County, about 2.5 miles south of Carnation, 750 feet south and 2,000 feet west of the northeast corner of sec. 33, T. 25 N., R. 7 E.

Oa1—0 to 10 inches; black (5YR 2/1) muck, dark reddish brown (5YR 3/2) dry; moderate coarse granular structure; very hard, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many fine irregular pores; about 50 percent fiber before rubbing and 5 percent after rubbing; strongly acid; clear smooth boundary.

Oa2—10 to 22 inches; black (5YR 2/1) sapric material, dark reddish brown (5YR 3/2) dry; moderate coarse prismatic structure; very hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; many fine irregular pores; about 40 percent fiber before rubbing and 10 percent after rubbing; strongly acid; clear smooth boundary.

Oa3—22 to 41 inches; dark reddish brown (5YR 2/2) sapric material, dark reddish brown (5YR 2/2) dry; massive; very hard, very friable, nonsticky and nonplastic; many fine irregular pores; about 40 percent fiber before rubbing and 5 percent after rubbing; strongly acid; clear smooth boundary.

2C—41 to 44 inches; dark brown (7.5YR 4/2) and pinkish gray (7.5YR 6/2) fine sandy loam (diatomaceous earth), pinkish gray (7.5YR 7/2) and light gray (N 7/0) dry; massive; hard, friable, nonsticky and nonplastic; many fine irregular pores; strongly acid; abrupt smooth boundary.

3O′a—44 to 51 inches; dark reddish brown (5YR 2/2) sapric material, dark reddish brown (5YR 3/2) dry; massive; hard, very friable, nonsticky and nonplastic; many fine irregular pores; strongly acid; abrupt smooth boundary.

4C′1—51 to 54 inches; gray (5Y 5/1) and very dark brown (10YR 2/2) silt loam (diatomaceous earth), light gray (5Y 7/1) and dark grayish brown (10YR 4/2) dry; many coarse prominent brownish yellow (10YR 6/6) mottles, yellow (10YR 7/6) dry; massive; slightly hard, friable, slightly sticky and plastic; many fine irregular pores; strongly acid; abrupt smooth boundary.

5C′2—54 to 57 inches; brownish yellow (10YR 6/6) fine sandy loam (diatomaceous earth), yellow (10YR 8/6) dry; massive; slightly hard, friable, nonsticky and nonplastic; many fine irregular pores; strongly acid; abrupt smooth boundary.

6C′3—57 to 60 inches; black (10YR 2/1) and dark brown (7.5YR 4/2), stratified muck (50 percent) and silt loam (50 percent), dark brown (7.5YR 3/2) and pinkish gray (7.5YR 7/2) dry; massive; very hard, friable, nonsticky and nonplastic; many fine irregular pores; strongly acid.

The organic material extends to a depth of 51 inches or more. The Oa horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 or 3 when dry, and chroma of 1 or 2 when moist and dry. The mineral horizons have hue of 7.5YR to 5Y, value of 4 to 6 when moist and 5 to 8 when dry, and chroma of 2 to 6 when moist and dry. They are made up of diatomaceous earth or volcanic ash. They are silt loam, loam, or fine sandy loam.

Tusip Series

The Tusip series consists of deep, well drained soils formed in volcanic ash, pumice, and cinders over residuum and colluvium derived from weathered sandstone. These soils are on rounded ridgetops and mountain back slopes. Slopes are 15 to 65 percent. Elevation is 2,700 to 3,600 feet. The average annual precipitation is 80 to 100 inches, and the mean annual temperature is about 42 degrees F. The frost-free period is 120 to 140 days.

These soils are ashy over loamy, mixed Typic Cryorthods.

Typical pedon of Tusip sandy loam, 30 to 65 percent slopes, in Pierce County, about 9 miles south of Fairfax, along St. Regis Road 21, about 2,500 feet east and 300 feet north of the southwest corner of sec. 14, T. 16 N., R. 6 E.

Oi&Oe—1 inch to 0; loose forest litter, including needles, moss, and partially decayed leaves, bark, and roots.

A—0 to 2 inches; dark brown (10YR 4/3) sandy loam (volcanic ash and cinders), brown (10YR 5/3) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; many very fine and fine roots; about 5 percent soft subangular sandstone pebbles and 10 percent hard cinders; moderately acid; abrupt smooth boundary.

Bs1—2 to 6 inches; dark brown (7.5YR 4/4) sandy loam

(volcanic ash and cinders), light brown (7.5YR 6/4) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; many very fine and fine and few medium roots; about 5 percent soft subangular sandstone pebbles and 10 percent hard cinders; strongly acid; abrupt smooth boundary.

Bs2—6 to 15 inches; strong brown (7.5YR 4/6) loamy sand (volcanic ash and cinders), reddish yellow (7.5YR 6/6) dry; single grain; loose, nonsticky and nonplastic; weakly smeary; many very fine and fine and few medium roots; about 5 percent soft and 5 percent hard subangular sandstone pebbles and 10 percent hard cinders; strongly acid; abrupt smooth boundary.

2Bs3—15 to 28 inches; yellowish brown (10YR 5/6) gravelly sandy loam, very pale brown (10YR 7/4) dry; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; moderately smeary; few very fine, fine, and medium roots; about 15 percent hard and 15 percent soft subangular sandstone pebbles; strongly acid; clear irregular boundary.

2Bs4—28 to 38 inches; yellowish brown (10YR 5/8) gravelly fine sandy loam, yellow (10YR 7/6) dry; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; few very fine roots; about 30 percent hard sandstone pebbles and 20 percent soft subangular sandstone pebbles; moderately acid; abrupt smooth boundary.

2Bs5—38 to 43 inches; yellowish brown (10YR 5/8) very gravelly fine sandy loam, yellow (10YR 7/6) dry; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; about 40 percent hard sandstone pebbles and 20 percent soft subangular sandstone pebbles; strongly acid; abrupt smooth boundary.

2Cr—43 inches; weathered sandstone that can be cut by a spade.

The depth to paralithic contact is 40 to 60 inches. Reaction is moderately acid or strongly acid throughout the profile.

The A horizon has value of 3 or 4 when moist and 4 or 5 when dry and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is sandy loam or loamy sand. It has 5 to 10 percent hard cinders.

The 2Bs horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6 when moist and 5 to 8 when dry, and chroma of 4 to 8 when moist and 4 to 6 when dry. It is gravelly sandy loam, gravelly fine sandy loam, or very gravelly fine sandy loam. It has 15 to 40 percent hard pebbles.

Typic Haplorthods

Typic Haplorthods consist of moderately deep and deep, well drained soils formed in volcanic ash, glacial drift, and colluvium. They are on glacially modified mountainsides and canyonsides. Slopes are 35 to 100 percent. Elevation is 1,000 to 2,500 feet. The average annual precipitation is 50 to 80 inches, and the mean annual air temperature is about 47 degrees F. The frost-free period is 130 to 150 days.

Typical pedon of Typic Haplorthods, 35 to 100 percent slopes, in Pierce County, about 2 miles southeast of Kapowsin, 2,200 feet west and 400 feet south of the northeast corner of sec. 17, T. 17 N., R. 5 E.

Oa—2 inches to 0; decomposed needles and leaves.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) very gravelly loam, grayish brown (10YR 5/2) dry; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common coarse roots; many very fine irregular pores; about 40 percent pebbles; strongly acid; clear smooth boundary.

Bs1—3 to 12 inches; dark brown (10YR 3/3) very gravelly loam, pale brown (10YR 6/3) dry; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; about 40 percent pebbles; strongly acid; clear smooth boundary.

Bs2—12 to 22 inches; dark brown (10YR 4/3) very gravelly loam, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; about 40 percent pebbles; moderately acid; clear smooth boundary.

Bs3—22 to 32 inches; olive brown (2.5Y 4/4) very gravelly loam, light yellowish brown (2.5Y 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common very fine irregular pores; about 50 percent pebbles; strongly acid; clear smooth boundary.

C—32 to 45 inches; dark brown (10YR 4/3) and light olive brown (2.5Y 5/4) very gravelly loam, yellowish brown (10YR 5/4) and pale yellow (2.5Y 7/4) dry; massive; hard, firm, slightly sticky and slightly plastic; common fine and medium roots; common fine irregular pores; about 55 percent pebbles; moderately acid; abrupt smooth boundary.

Cd—45 to 60 inches; grayish brown (2.5Y 5/2), dense glacial till that crushes to extremely gravelly loamy sand, light gray (2.5Y 7/1) dry; massive; very hard, firm, slightly sticky and slightly plastic; common fine and medium pores; about 65 percent pebbles; strongly acid.

The depth to dense glacial till or bedrock is 20 to 60 inches. The thickness of the solum is 18 to 40 inches. The content of rock fragments in the particle-size control section is 35 to 60 percent.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 2 to 4 when moist and dry.

The Bs horizon has value of 3 or 4 when moist and 4 to 6 when dry and chroma of 3 or 4 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 2 to 4 when moist and dry. It is very gravelly loam or very gravelly sandy loam.

The Cd horizon is dense glacial till that crushes to very gravelly loam, very gravelly sandy loam, very gravelly loamy sand, or extremely gravelly loamy sand. It has hue of 2.5Y or 5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 1 or 2 when moist and dry.

Typic Udifluvents

Typic Udifluvents consist of very deep, well drained soils formed in alluvium. They are on low stream terraces and in drainageways. Slopes are 0 to 3 percent. Elevation is 1,000 to 2,500 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 46 degrees F. The frost-free period is 140 to 160 days.

Typical pedon of Typic Udifluvents, 0 to 3 percent slopes, in King County, about 5 miles southeast of Maple Valley, 2,400 feet west and 2,500 feet north of the southeast corner of sec. 17, T. 22 N., R. 7 E.

Oi—0.5 inch to 0; undecomposed needles, leaves, and twigs.

A—0 to 5 inches; very dark brown (10YR 2/2) silt loam, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; strongly acid; clear wavy boundary.

Bw—5 to 16 inches; dark yellowish brown (10YR 3/4) silt loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; many fine irregular pores; strongly acid; clear wavy boundary.

C1—16 to 31 inches; dark yellowish brown (10YR 3/4) fine sandy loam, yellowish brown (10YR 5/4) dry; massive; soft, very friable, nonsticky and nonplastic; common fine and few coarse roots; many fine irregular pores; moderately acid; clear wavy boundary.

C2—31 to 60 inches; dark yellowish brown (10YR 3/4) sandy loam, yellowish brown (10YR 5/4) dry; massive; soft, very friable, nonsticky and nonplastic; few coarse roots; many fine irregular pores; moderately acid.

The depth to stratified loamy or sandy material ranges from 15 to 50 inches.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 3 to 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 3 or 4 when moist and dry. It is silt loam or fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It is dominantly fine sandy loam or sandy loam but in some pedons is stratified with gravelly coarse sand.

Udifluvents

Udifluvents consist of very deep, well drained soils formed in alluvium. They are on low stream terraces and in drainageways. Slopes are 0 to 8 percent. Elevation is 1,300 to 2,500 feet. The average annual precipitation is 60 to 80 inches, and the mean annual air temperature is about 44 degrees F. The frost-free period is 140 to 160 days.

Typical pedon of Udifluvents, moist, 0 to 8 percent slopes, in King County, about 4 miles southeast of Greenwater, 1,300 feet west and 2,200 feet south of the northeast corner of sec. 18, T. 19 N., R. 10 E.

Oi—2 inches to 0; undecomposed needles, leaves, and twigs.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine irregular pores; about 30 percent pebbles; strongly acid; abrupt smooth boundary.

A2—3 to 6 inches; dark brown (10YR 4/3) gravelly sandy loam, brown (10YR 5/3) dry; weak fine

granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine irregular pores; about 30 percent pebbles; strongly acid; abrupt smooth boundary.

C1—6 to 15 inches; dark brown (7.5YR 4/4) very gravelly loamy sand, brown (7.5YR 5/4) dry; single grain; soft, very friable, nonsticky and nonplastic; many fine, common very fine and medium, and few coarse roots; many fine irregular pores; about 40 percent pebbles and 5 percent cobbles; strongly acid; clear smooth boundary.

C2—15 to 21 inches; dark brown (10YR 4/3) very gravelly loamy sand, brown (10YR 5/3) dry; single grain; soft, very friable, nonsticky and nonplastic; many fine, common very fine and medium, and few coarse roots; many fine irregular pores; about 40 percent pebbles and 5 percent cobbles; moderately acid; clear smooth boundary.

C3—21 to 28 inches; brown (10YR 5/3) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) dry; massive; slightly hard, friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many fine irregular pores; about 45 percent pebbles and 15 percent cobbles; moderately acid; clear smooth boundary.

C4—28 to 60 inches; brown (10YR 5/3) extremely gravelly sandy clay loam, light yellowish brown (10YR 6/4) dry; massive; slightly hard, friable, nonsticky and nonplastic; few fine, medium, and coarse roots; many fine irregular pores; about 45 percent pebbles and 15 percent cobbles; moderately acid.

The depth to stratified, loamy or sandy, gravelly material is 15 to 50 inches. The A horizon has hue of 7.5YR or 10YR, value of 2 to 4 when moist and 3 to 5 when dry, and chroma of 2 or 3 when moist and dry. The C horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 3 to 6 when moist and dry. It is stratified with extremely gravelly sand in some pedons.

Vailton Series

The Vailton series consists of deep, well drained soils formed in a mixture of volcanic ash and colluvium and residuum derived from siltstone and sandstone. These soils are on mountain back slopes. Slopes are 8 to 65 percent. Elevation is 1,700 to 2,800 feet. The average annual precipitation is 70 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 160 to 180 days.

These soils are medial, frigid Andic Haplumbrepts.

Typical pedon of Vailton silt loam, 8 to 30 percent slopes, in Pierce County, about 9 miles south of Fairfax, near Niesson Creek, 3,100 feet west and 3,000 feet south of the northeast corner of sec. 15, T. 16 N., R. 6 E.

Oi—3 to 2 inches; undecomposed needles, leaves, and twigs.

Oa—2 inches to 0; black (10YR 2/1), decomposed organic mat.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 2 percent pebbles; strongly acid; clear smooth boundary.

A2—2 to 10 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; about 2 percent pebbles; strongly acid; clear wavy boundary.

AB—10 to 15 inches; brown (10YR 4/3) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 10 percent pebbles; strongly acid; abrupt wavy boundary.

Bw1—15 to 27 inches; dark yellowish brown (10YR 4/4) silt loam, very pale brown (10YR 7/4) dry; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium and few coarse roots; many very fine irregular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

Bw2—27 to 37 inches; dark yellowish brown (10YR 4/4) silt loam, very pale brown (10YR 7/4) dry; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; weakly smeary; many very fine irregular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

BC—37 to 43 inches; dark brown (7.5YR 4/4) silty clay loam, pink (7.5YR 7/4) dry; moderate medium angular blocky structure; hard, firm, sticky and plastic; weakly smeary; common very fine irregular pores; about 10 percent pebbles; strongly acid; abrupt smooth boundary.

Cr—43 inches; dark grayish brown (2.5Y 4/2), weathered sandstone.

The depth to weathered sandstone or siltstone is 40 to 60 inches. The content of soft rock fragments in the particle-size control section ranges from 10 to 25 percent.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 4 or 5 when dry, and chroma of 2 or 3 when moist and dry. The Bw horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 6 or 7 when dry, and chroma of 3 or 4 when moist and dry. It is silt loam or silty clay loam.

Voight Series

The Voight series consists of very deep, well drained soils formed in residuum and colluvium derived from extrusive igneous rocks. These soils are on mountain back slopes. Slopes are 6 to 65 percent. Elevation is 1,700 to 2,800 feet. The average annual precipitation is 60 to 90 inches, and the mean annual air temperature is about 43 degrees F. The frost-free period is 135 to 155 days.

These soils are fine-loamy, mixed Eutric Glossoboralfs.

Typical pedon of Voight silt loam, 6 to 15 percent slopes, in Pierce County, about 4 miles southeast of Ohop, 50 feet northeast of Weyerhaeuser Road 1611A, about 0.2 mile from its intersection with Koll Road, 200 feet east and 550 feet south of the northwest corner of sec. 10, T. 16 N., R. 5 E.

Oi—10 to 7 inches; needles, twigs, leaves, and bark.

Oa—7 inches to 0; decomposed organic material and rotted wood; many very fine, fine, medium, and coarse roots.

A—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many fine and very fine tubular pores; about 5 percent angular pebbles; strongly acid; clear smooth boundary.

Bt1—11 to 27 inches; brown (7.5YR 4/4) silty clay loam, light brown (7.5YR 6/4) dry; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine and few medium and coarse roots; many fine and very fine pores; few thin, patchy clay films on faces of peds and in pores; about 5 percent angular pebbles; strongly acid; gradual smooth boundary.

Bt2—27 to 43 inches; brown (7.5YR 4/4) silty clay loam, light brown (7.5YR 6/4) dry; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and fine tubular pores; common moderately thick, clay films in pores; about 5 percent angular pebbles; strongly acid; clear smooth boundary.

Bt3—43 to 58 inches; reddish brown (5YR 4/4) silty clay loam, reddish brown (5YR 5/4) dry; weak medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; common moderately thick clay films in pores; about 5 percent angular pebbles; strongly acid; clear smooth boundary.

C—58 to 65 inches; dark reddish brown (5YR 3/4) and brown (7.5YR 4/2) silt loam, reddish brown (5YR 4/4) and light brownish gray (10YR 6/2) dry; massive; exhibits rock structure prior to rubbing; hard, firm, slightly sticky and plastic; few very fine tubular pores; about 5 percent angular pebbles; moderately acid.

Reaction is strongly acid or moderately acid throughout the profile.

The A horizon has value of 2 or 3 when moist and 4 or 5 when dry and chroma of 2 or 3 when moist and dry.

The Bt1 and Bt2 horizons have hue of 7.5YR or 10YR, value of 4 or 5 when moist and 5 or 6 when dry, and chroma of 3 to 6 when moist and dry. They are silty clay loam, clay loam, or gravelly silty clay loam.

The Bt3 horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is silty clay loam, gravelly silty clay loam, loam, gravelly loam, silt loam, or gravelly silt loam. The content of coarse fragments is 0 to 35 percent by volume.

The C horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 4 to 6 when dry, and chroma of 2 to 4 when moist and dry. It is silt loam, gravelly silt loam, loam, or gravelly loam. The content of coarse fragments is 0 to 35 percent by volume.

Welcome Series

The Welcome series consists of deep, well drained soils formed in volcanic ash, colluvium, and slope alluvium derived from sandstone and modified by glacial till. These soils are on mountain back slopes. Slopes are 0 to 65 percent. Elevation is 1,800 to 2,500 feet. The average annual precipitation is 60 to 90 inches, and the mean annual air temperature is about 44

degrees F. The frost-free period is 150 to 170 days.

These soils are coarse-loamy, mixed, frigid Typic Haplorthods.

Typical pedon of Welcome loam, 0 to 30 percent slopes, in King County, about 5 miles southeast of Issaquah, 800 feet west and 1,200 feet north of the southeast corner of sec. 7, T. 23 N., R. 7 E.

Oi—1 inch to 0; undecomposed needles and twigs.

A—0 to 2 inches; very dark brown (10YR 2/2) loam, dark brown (7.5YR 3/2) dry; weak medium granular structure; soft, very friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine irregular pores; about 5 percent hard pebbles; strongly acid; abrupt wavy boundary.

Bs1—2 to 5 inches; dark brown (7.5YR 4/4) loam, yellowish brown (10YR 5/4) dry; strong medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; weakly smeary; common fine and medium roots; many very fine irregular pores; about 10 percent hard pebbles and 5 percent weathered pebbles; NaF pH 12.0; moderately acid; clear smooth boundary.

Bs2—5 to 12 inches; strong brown (7.5YR 4/6) silt loam, strong brown (7.5YR 5/6) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; common fine and medium roots; many very fine irregular pores; about 10 percent hard pebbles and 5 percent weathered pebbles; NaF pH 12.0; moderately acid; clear smooth boundary.

Bs3—12 to 25 inches; dark yellowish brown (10YR 4/6) gravelly loam, yellowish brown (10YR 5/4) dry; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; weakly smeary; few fine and medium roots; many very fine irregular pores; about 15 percent hard pebbles and 10 percent weathered pebbles; NaF pH 12.0; moderately acid; clear smooth boundary.

BC—25 to 35 inches; light olive brown (2.5Y 5/4) gravelly loam, pale yellow (2.5Y 7/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; few fine and medium roots; about 15 percent hard pebbles and 15 percent weathered pebbles; NaF pH 11.5; moderately acid; clear smooth boundary.

C—35 to 53 inches; light olive brown (2.5Y 5/4) fine sandy loam, pale yellow (2.5Y 7/4) and brownish yellow (10YR 6/6) dry; massive; slightly hard, friable, nonsticky and nonplastic; about 20 percent weathered pebbles; NaF pH 10.5; moderately acid; clear smooth boundary.

Cr—53 inches; light olive brown (2.5Y 5/4), soft sandstone that crushes to loamy sand, pale yellow (2.5Y 7/4) dry; can be cut by a spade with difficulty.

The depth to weathered, soft sandstone ranges from 40 to 60 inches. The particle-size control section has 0 to 15 percent hard pebbles and 10 to 30 percent weathered pebbles.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 to 5 when dry, and chroma of 2 to 4 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 5 or 6 when dry, and chroma of 4 to 6 when moist and dry. It is loam, silt loam, or gravelly loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is fine sandy loam, sandy loam, or loamy sand.

Wilkeson Series

The Wilkeson series consists of very deep, well drained soils formed in residuum and colluvium derived from andesite and basalt. These soils are on foothills and mountains. Slopes are 6 to 65 percent. Elevation is 600 to 1,800 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 47 degrees F. The frost-free period is 140 to 160 days.

These soils are fine-loamy, mixed, mesic Ultic Haploxeralfs.

Typical pedon of Wilkeson gravelly silt loam, 30 to 45 percent slopes, in Pierce County, about 0.5 mile east of Ohop, 1,700 feet east and 1,600 feet south of the northwest corner of sec. 21, T. 17 N., R. 5 E.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, grayish brown (10YR 5/2) dry; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine pores; about 5 percent shotlike aggregates and 30 percent angular pebbles; moderately acid; abrupt smooth boundary.

A2—4 to 10 inches; dark brown (10YR 3/3) very gravelly loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine, medium, and coarse roots; many very fine and fine pores; about 5 percent shotlike aggregates and 45 percent angular pebbles; strongly acid; diffuse wavy boundary.

BA—10 to 18 inches; brown (10YR 4/3) gravelly silt loam, brown (10YR 5/3) dry; weak fine subangular

blocky structure; hard, firm, sticky and plastic; many fine, medium, and coarse roots; many very fine and fine pores; about 20 percent shotlike aggregates and angular pebbles; strongly acid; clear wavy boundary.

Bt1—18 to 27 inches; dark yellowish brown (10YR 4/4) gravelly loam, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many fine, medium, and coarse roots; common very fine and fine pores; thin, patchy clay films in pores; about 5 percent shotlike aggregates and 30 percent angular pebbles; strongly acid; diffuse wavy boundary.

Bt2—27 to 36 inches; yellowish brown (10YR 5/4) loam, light yellowish brown (10YR 6/4) dry; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few fine and coarse roots; common very fine and fine pores; moderately thick, patchy clay films in fine pores; about 5 percent angular pebbles; moderately acid; gradual wavy boundary.

Bt3—36 to 49 inches; dark yellowish brown (10YR 4/4) loam, yellowish brown (10YR 5/6), light yellowish brown (10YR 6/4), and pale brown (10YR 6/3) dry; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; common very fine and fine pores; thick, patchy clay films on faces of peds and in very fine pores; about 10 percent angular pebbles; moderately acid; diffuse wavy boundary.

BCt—49 to 60 inches; yellowish brown (10YR 5/4) gravelly loam, light reddish brown (2.5YR 6/4), very pale brown (10YR 7/3), light yellowish brown (10YR 6/4), and brownish yellow (10YR 6/6) dry; massive; hard, firm, sticky and plastic; few fine roots; few very fine and fine pores; thick, continuous clay films in very fine pores; about 25 percent angular pebbles; moderately acid.

The particle-size control section ranges from 18 to 35 percent clay and from 15 to 35 percent coarse fragments.

The A horizon has chroma of 2 or 3 when moist and dry. Reaction is strongly acid or moderately acid.

The Bt horizon has hue of 10YR or 7.5YR, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is loam, gravelly silt loam, gravelly loam, gravelly clay loam, or gravelly silty clay loam.

The BCt horizon has hue of 10YR, 7.5YR, or 2.5Y, value of 5 or 6 when moist and 5 to 8 when dry, and chroma of 3 to 6 when dry. It is loam, gravelly loam, or gravelly clay loam. Reaction is strongly acid to slightly acid.

Winston Series

The Winston series consists of very deep, well drained soils formed in volcanic ash and glacial outwash. These soils are on terraces and escarpments. Slopes are 0 to 30 percent. Elevation is 1,000 to 1,500 feet. The average annual precipitation is 50 to 70 inches, and the mean annual air temperature is about 48 degrees F. The frost-free period is 150 to 170 days.

These soils are coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Haplorthods.

Typical pedon of Winston loam, 0 to 8 percent slopes, in King County, at the north edge of the Howard Hanson Reservoir, 650 feet north and 800 feet west of the southeast corner of sec. 22, T. 21 N., R. 8 E.

Oi—1 inch to 0; undecomposed needles, leaves, and twigs.

A—0 to 5 inches; dark brown (7.5YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium roots; many very fine irregular pores; about 5 percent pebbles; moderately acid; clear smooth boundary.

Bs1—5 to 11 inches; strong brown (7.5YR 4/6) loam, yellowish brown (10YR 5/6) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine and fine and common medium and coarse roots; many very fine irregular pores; about 10 percent pebbles; moderately acid; clear smooth boundary.

Bs2—11 to 21 inches; dark brown (7.5YR 3/4) gravelly loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 15 percent pebbles; slightly acid; clear smooth boundary.

Bs3—21 to 34 inches; dark brown (7.5YR 4/4) gravelly fine sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; weakly smeary; common very fine and fine roots; many very fine irregular pores; about 20 percent pebbles; slightly acid; abrupt wavy boundary.

2C—34 to 60 inches; very dark grayish brown (10YR 3/2) extremely gravelly sand, grayish brown (10YR 5/2) dry; single grain; loose; many fine irregular pores; about 60 percent pebbles and 5 percent cobbles; neutral.

The thickness of the solum and depth to the 2C horizon range from 14 to 38 inches. The content of rock

fragments ranges from 15 to 35 percent in the upper part of the particle-size control section and from 35 to 70 percent in the lower part.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3 when moist and 3 to 5 when dry, and chroma of 2 or 3 when moist and dry.

The Bs horizon has hue of 7.5YR or 10YR, value of 3 or 4 when moist and 4 or 5 when dry, and chroma of 4 to 6 when moist and dry. It is loam, gravelly loam, or gravelly fine sandy loam.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5 when moist and 4 to 7 when dry, and chroma of 1 to 4 when moist and dry. It is very gravelly loamy sand, very gravelly sand, extremely gravelly loamy sand, or extremely gravelly sand.

Woodinville Series

The Woodinville series consists of very deep, poorly drained soils formed in alluvium stratified with decomposed organic material. These soils are on flood plains. Slopes are 0 to 2 percent. Elevation is 50 to 120 feet. The average annual precipitation is 40 to 50 inches, and the mean annual air temperature is about 50 degrees F. The frost-free period is 180 to 200 days.

These soils are fine-silty, mixed, nonacid, mesic Aeric Fluvaquents.

Typical pedon of Woodinville silt loam, 0 to 2 percent slopes, in King County, about 1 mile northeast of Carnation, 2,500 feet north and 750 feet east of the southwest corner of sec. 10, T. 25 N., R. 7 E.

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; very hard, friable, sticky and plastic; many very fine and fine roots; many very fine irregular pores; strongly acid; abrupt smooth boundary.

Cg1—7 to 12 inches; light olive gray (5Y 6/2) silt loam, white (5Y 8/1) dry; massive; very hard, friable, sticky and plastic; common very fine and fine roots; many very fine irregular pores; strongly acid; clear smooth boundary.

Cg2—12 to 15 inches; olive gray (5Y 5/2) silt loam, light gray (5Y 7/2) dry; common coarse prominent strong brown (7.5YR 5/8) and brownish yellow (10YR 6/6) mottles, strong brown (7.5YR 5/8) and yellow (10YR 7/6) dry; massive; very hard, friable, sticky and plastic; common very fine and fine roots; many very fine irregular pores; strongly acid; abrupt smooth boundary.

Oa&Cg1—15 to 19 inches; stratified dark brown (10YR 3/3) muck (70 percent) and dark brown (10YR 4/3) silt loam (30 percent), brown (10YR 5/3) and light gray (10YR 7/2) dry; massive; hard, friable, sticky and plastic; common fine roots; many very fine irregular pores; moderately acid; clear smooth boundary.

Oa&Cg2—19 to 26 inches; stratified dark brown (7.5YR 3/2) muck (60 percent) and dark brown (10YR 3/3) and grayish brown (10YR 5/2) silt loam (40 percent), dark brown (7.5YR 3/4), very pale brown (10YR 7/3), and light gray (10YR 7/2) dry; massive; hard, friable, sticky and plastic; many very fine irregular pores; moderately acid; clear smooth boundary.

Cg&Oa—26 to 42 inches; stratified grayish brown (10YR 5/2) silt loam (60 percent) and dark brown (10YR 4/3) muck (40 percent), white (2.5Y 8/2) and brown (10YR 5/3) dry; massive; hard, friable, sticky and plastic; many very fine irregular pores; moderately acid; abrupt smooth boundary.

C′g—42 to 53 inches; grayish brown (2.5Y 5/2) silt loam, white (2.5Y 8/2) dry; few fine prominent brownish yellow (10YR 6/6) mottles, yellow (10YR 7/6) dry; massive; hard, friable, sticky and plastic; many very fine irregular pores; strongly acid; abrupt smooth boundary.

O′a&C′g—53 to 60 inches; stratified very dark brown (10YR 2/2) muck (50 percent) and grayish brown (10YR 5/2) silt loam (50 percent), very dark grayish brown (10YR 3/2) and light gray (10YR 7/2) dry; massive; extremely hard, friable, sticky and plastic; many fine irregular pores; strongly acid.

The mineral material above the stratified, mineral and organic material is 20 to 40 inches thick.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4 when moist and 5 or 6 when dry, and chroma of 2 or 3 when moist and dry.

The Cg horizon has hue of 2.5Y or 5Y, value of 5 or 6 when moist and 7 or 8 when dry, and chroma of 1 or 2 when moist and dry. It is silt loam or silty clay loam.

The Cg and Oa layers below the Cg horizon occur as strata of mineral and organic material. The Cg material has hue of 7.5YR to 2.5YR, value of 3 to 5 when moist and 6 to 8 when dry, and chroma of 2 to 4 when moist and dry. The Oa material has value of 2 to 4 when moist and 3 to 5 when dry.

Zynbar Series

The Zynbar series consists of very deep and deep, well drained soils formed in a mixture of volcanic ash, colluvium derived from basic igneous rocks, and glacial till. These soils are on mountain back slopes. Slopes are 0 to 65 percent. Elevation is 1,600 to 2,800 feet. The average annual precipitation is 70 to 100 inches, and the mean annual air temperature is about 44

degrees F. The frost-free period is 140 to 160 days.

These soils are medial, frigid Entic Dystrandepts.

Typical pedon of Zynbar loam, 6 to 30 percent slopes, in Pierce County, about 4 miles southeast of Ohop, 1,800 feet west and 900 feet south of the northeast corner of sec. 35, T. 17 N., R. 5 E.

Oi—2 inches to 0.5 inch; undecomposed needles, twigs, and bark.

Oa—0.5 inch to 0; decomposed organic mat.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, dark brown (10YR 4/3) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; moderately acid; clear smooth boundary.

A2—5 to 10 inches; dark brown (10YR 4/3) loam, yellowish brown (10YR 5/4) dry; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; moderately acid; clear smooth boundary.

Bw1—10 to 18 inches; dark yellowish brown (10YR 4/4) loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; weakly smeary; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; moderately acid; clear smooth boundary.

Bw2—18 to 28 inches; dark yellowish brown (10YR 4/4) gravelly silt loam, very pale brown (10YR 7/4) dry; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many very fine irregular pores; about 15 percent pebbles; slightly acid; clear smooth boundary.

Bw3—28 to 41 inches; dark yellowish brown (10YR 4/6) gravelly silt loam, very pale brown (10YR 7/4) dry; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; common very fine, fine, and medium roots; many very fine irregular pores; about 20 percent pebbles; slightly acid; clear smooth boundary.

C—41 to 60 inches; dark yellowish brown (10YR 4/6) silt loam, very pale brown (10YR 7/4) dry; weak medium angular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; weakly smeary; common very fine irregular pores; slightly acid.

The thickness of the solum ranges from 40 to more than 60 inches. The content of rock fragments in the particle-size control section ranges from 15 to 25 percent.

The A horizon has value of 2 to 4 when moist and 4 to 6 when dry and chroma of 2 to 4 when moist and dry.

The Bw horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5 when moist and 5 to 7 when dry, and chroma of 3 to 6 when moist and dry. It is loam, silt loam, gravelly loam, or gravelly silt loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5 when moist and 6 or 7 when dry, and chroma of 4 to 6 when moist and dry. It is loam, silt loam, gravelly loam, or gravelly silt loam.

Formation of the Soils

By James A. Mitchell, Soil Conservation Service.

Soil is a dynamic, natural, three-dimensional body formed in mineral and organic material on the surface of the Earth. It provides air, water, root anchorage, and sustenance for plants. It is a fundamental part of the ecosystem.

Soil forms through the integrated effects of physical, biological, and chemical weathering of geological material acting over time. It differs in appearance, productivity, and management requirements in different localities and even within short distances. Individual soils are characterized by a vertical sequence of layers, or horizons, which vary in such properties as color, texture, acidity, and amount of rock fragments. Horizons are continually forming and evolving in response to environmental factors. The characteristics and properties of the soil at any given place are determined by the interaction of the following five factors: the physical, chemical, and mineralogical composition of the parent material; the climatic conditions acting on the parent material during the evolution of the soil; the topography, or relief, of the landscape; the plant and animal life in and on the soil; and the age of the soil, or the length of time that the climate, topography, and biota have acted on the parent material.

The five factors are interdependent. The combined action of these forces results in soil formation, although one or two of the factors may predominate in a given area. Climate and biota, particularly vegetation, are the active forces of soil formation. A particular set of soil-forming factors gives rise to a unique soil profile. As any one factor changes, so does the soil.

In the following sections, the effects on soil formation of climate, biological forces, and parent material are described separately. The effects of topography and time, or age, are described under the heading "Geomorphology."

Climate

Climate greatly influences soil formation. To a large degree, it controls the chemical and physical reactions taking place in the soil. Moisture and temperature are especially important.

Water dissolves soluble material in soil and transports material from one part of the soil to another. The transported material includes particulate and colloidal material, such as silt and clay, and substances fully dissolved into solution. Water is necessary for the growth of plants and other organisms, which contribute organic matter to the soil and affect the mobility and formation of chemical products.

Temperature affects the rate of chemical reactions, the rate of the physical breakdown of soil material caused by the freezing of water, and the duration of snow cover. Freezing and thawing of water causes expansion and contraction, which influence the movement of soil particles and rock fragments in the soil. The duration of snow cover helps to determine the amount of effective precipitation and the soil temperature.

Because the survey area is on the west side of the Cascade Mountain Crest, the climate of the area has a strong marine influence from the Pacific Ocean. Because the elevation ranges from 25 to 6,278 feet above sea level, however, both the amount and form of precipitation and the temperature vary considerably.

The soils in most parts of the survey area have a udic moisture regime. This determination is based on the fact that most of the total annual precipitation falls between October and May and that the total annual precipitation exceeds 70 inches. Because most of the precipitation at the higher elevations is in the form of snow, however, the moisture may not enter the soil or may not be retained by the coarse textured soils for very long after the snowpack melts. The combination of these factors can result in a significant reduction in effective precipitation, particularly on south-facing slopes. The condition caused by the reduction in effective precipitation in the soils at the higher elevations approximates a xeric moisture regime.

Besides the indicated udic regime, two other soil moisture regimes are encountered in the survey area. Soils in the aquic moisture regime are on the poorly drained bottom land, in river valleys along the western border of the survey area, and in depressions in areas on uplands where a seasonal high water table keeps the soils saturated for prolonged periods. Soils in the

xeric moisture regime are in the western part of the survey area, where the annual precipitation is less than about 70 inches. The conditions in this area approximate those in the Puget Trough section, which is one of the three major physiographic and geologic divisions in the survey area described under the heading "Geomorphology."

Definitions of the three soil moisture regimes are provided in the "Glossary." The xeric moisture regime is that typified in Mediterranean climates. It provides less moisture to plants during the growing season than a udic regime.

The considerable variation in elevation within the survey area results in three soil temperature regimes. These regimes are mesic, frigid, and cryic. They are zoned vertically by increasing elevation and by latitude. The boundaries between regimes decrease in elevation from south to north. The boundary between the frigid and cryic regimes is indicated by the presence of Pacific silver fir *(Abies amabilis)*. Soil temperatures reported in this section are the result of a 2-year, systematic measurement effort made during the course of this survey.

Five major moisture and temperature zones are in the survey area. In the following paragraphs, these climatic zones are briefly described.

Climate zone one has an annual precipitation of less than 50 inches, occurring predominantly in the form of rain from October through May. The average annual soil temperature is 49 or 50 degrees F, which is in the mesic temperature regime. The annual distribution and quantity of precipitation indicate a xeric soil moisture regime. This is the least extensive climate zone in the survey area. It occurs only along the western border of the area and in the major river valleys.

Most of the soils in zone one, such as Alderwood and Beausite soils, have a light colored surface layer (ochric epipedon) and are Haplorthods. Some are Xerolls, Xerumbrepts, or Xerofluvents. The soils generally do not have a spodic horizon. Some, however, have a weakly developed one. Development may be weak and uncommon because the vegetation that readily generates sufficient quantities of mobile fluvic acids upon decomposition is scarce.

A spodic horizon is a subsurface layer in which active amorphous materials, made up of organic material and aluminum and in places iron, have precipitated. It is a diagnostic characteristic of Spodosols. Fluvic acid, which is capable of complexing metal ions in the eluvial soil layer and transporting the required precipitate to the spodic horizon *(25)*, is generated by the decomposition of vegetation and organic litter on the surface. The spodic horizon is more strongly expressed under some vegetative species than others *(31)*.

Climate zone two has an annual precipitation of 50 to 70 inches. It has a mesic soil temperature regime. Most of the precipitation occurs in the form of rain from October through May. Snow is infrequent.

Generally, the soils in zone two have a high degree of forest productivity. Even the coarse textured soils in this zone have a higher degree of productivity than that of similar soils in zone one. Because they receive a large amount of precipitation, have unrestricted drainage, and are in upland positions, most of the soils in zone two have a low base saturation. Some areas of zone two receive less precipitation than the rest of the zone. The soils in these areas are in the xeric moisture regime. Large variations in moisture content occur in these soils. They allow for the movement of colloidal clay and the subsequent development of an argillic horizon, which is an illuvial subsoil in which clay has accumulated to a significant extent. Scamman and Mashel are examples of soils that have an argillic horizon. They are Alfisols. Some soils in this zone have illuvial clay in the subsoil, but the amount of clay is not sufficient for the subsoil to qualify as an argillic horizon.

Along the upper limit of zone two and the lower limit of Zone three is a small linear area, trending north to south, that receives about 70 inches of rainfall per year. It has an average annual soil temperature of about 47 degrees F, which is in the mesic temperature regime. It has the highest degree of forest productivity in the survey area. This high productivity is not solely the result of climate; many of the soils in this band have a high available water capacity and a high nutrient-holding capacity. The vegetation in this band may be characterized as the western hemlock/western swordfern *(Tsuga heterophylla/Polystichum munitum)* plant association *(15)*.

Climate zone three has an average annual precipitation of 70 to 130 inches. The average annual soil temperature is 43 to 47 degrees F, which is in the frigid temperature regime. This zone frequently receives precipitation in the form of snow. The snow remains on the ground for only a short period, and a snowpack does not develop. The upper elevation of this zone generally is about 2,600 feet, but it varies with latitude, aspect, and local climatic conditions.

In winter low soil temperatures reduce the rate of biological and chemical activity. Because of low air temperatures and the lack of continuous snow cover, freezing is common in the upper few inches of the soils.

Climatic zone three supports much more western hemlock *(Tsuga heterophylla)* than zone one. Many of the soils exhibit features of spodic horizon development.

Although they generally do not meet the chemical criteria for a spodic horizon, they are classified as Spodosols because they have cracked coatings on sand grains and have silt-sized and larger pellets. Examples of such soils in this zone are Elwell, Littlejohn, Oakes, and Pitcher soils.

Because of the content of clay in the soils and the amount of time that the soils have been subject to weathering, Christoff and Voight are the only soils in this zone that have an argillic horizon. An argillic horizon requires a long time to form in mobile clays. The texture of some of the soils in this zone limits the downward movement of water through the profile. This restriction results in a zone in which colloidal clay is precipitated when the soil dries in summer. Most of the soils in this zone, however, are coarse textured and have unrestricted drainage. In Voight soils albic material (leached mineral soil) tongues into the argillic horizon. This condition is consistent with features common to the other soils in this climate zone.

The cool temperatures of this zone have slowed the decomposition and incorporation of organic matter in the surface layer of some of the soils, producing a light colored surface horizon (ochric epipedon). Examples of soils having an ochric epipedon are Elwell, Littlejohn, and Pitcher soils. Precipitation has leached bases from the surface layer of other soils, producing a dark surface layer (umbric epipedon). Examples of soils having an umbric epipedon are Dobbs, Jonas, and Pheeney soils.

Climate zone four has an average annual precipitation of 75 to 100 inches, dominantly in the form of snow. The average annual soil temperature is 43 to 46 degrees F, and the mean soil temperature in summer is less than 59 degrees F. The soils in this zone are in the cryic temperature regime. The average annual snowfall is 300 to 450 inches. Winter snowpacks are as deep as 9 feet and last through April at the upper elevations. This zone approximates the Pacific silver fir *(Abies amabilis)* major vegetative zone.

The soils in zone four are dominantly Haplic Cryohumods and Typic Cryorthods, which have a leached surface layer (albic horizon) and an accumulation of organic matter, iron, and aluminum in the subsoil. Cattcreek and Crinker soils are examples of Typic Cryorthods. The soils that have more organic carbon than iron in the subsoil formed in ashy or sandy material. Index and Klapatche soils are examples of Haplic Cryohumods. The Typic Cryorthods and the Haplic Cryohumods have a relatively low bulk density, a low base saturation, and a high available water capacity relative to clay content.

Climate zone five approximates the mountain hemlock *(Tsuga mertensiana)* major vegetative zone. At the highest elevations subalpine fir *(Abies lasiocarpa)* is common. This zone receives as much as 130 inches of precipitation, dominantly in the form of snow. The average annual soil temperature is 38 to 42 degrees F, and the mean soil temperature in summer is about 45 degrees F. The soils in this zone are in the cryic temperature regime. The soil and air temperatures of this zone are significantly colder than those of climate zone four. Snowfall accumulates in deep snowpacks that last through May. Because of the pattern of winter storms in the western Cascades, many of the soils in this zone receive less precipitation than those in zone four. Many of the storms approach at a low level or elevation and thus commonly deposit more moisture at the lower elevations. The amount of effective precipitation is significantly reduced by evaporation, sublimation, and runoff during snowmelt.

Because of the accumulation of organic matter in a spodic horizon, the soils in zone five are dominantly Typic Cryohumods and Humic Cryorthods. Typically, they have a thick organic mat on the surface. The mat is almost hydrophobic when dry. These features are associated with cold temperatures, which slow biological activity and organic matter degradation.

Chinkmin and Kindy are examples of soils in this zone that exhibit the development of a cemented layer in the spodic horizon. This cemented layer is termed *ortstein*. It is the result of the precipitation of illuvial sesquioxides and organic matter. This precipitation may occur in the spodic horizon because percolating water is insufficient to carry colloids and solutes farther into the soil profile *(5)*. The climate and the thick organic mat on the surface may be responsible for the insufficiency in the Chinkmin and Kindy soils. These soils also have compacted glacial till at a moderate depth, which contributes to the inhibition of deep percolation and to the precipitation of sesquioxides.

Climate zone five has significant areas of alpine meadow covered by heath shrub or by lush herbaceous vegetation. The Treen soils are an example of soils in these areas. Because of the herbaceous vegetation, the very cold climate, and the extensive periods of deep snowpack, they are shallow and have a dark surface layer. They are Medial Lithic Cryandepts.

Biological Forces

Vegetation, burrowing animals, insects, earthworms, bacteria, and fungi are important in the formation of soils. Plants draw moisture and nutrients from the soil and improve aeration, soil structure, and permeability. They intercept rainfall and mitigate its impact. Roots

help to control runoff and erosion by stabilizing the soil. The remains of dead plants replenish the content of organic matter in the soil.

Living organisms significantly affect soil properties. Rodents, earthworms, and various other animals and insects assist in the decomposition of organic substances and mix the soil. Decay organisms are involved in the synthesis of humus. Some micro-organisms supply nitrogen as a nutrient for plants, modifying the pattern and extent of organic matter accumulation in the soil *(17)*. Because most of the survey area is forested, mycorrhizal fungi are especially significant. Nearly all forest plants have evolved with a strong dependence on this fungi for extracting nutrients from the soil *(28)*.

Some biological forces have a destructive effect on soil formation. Extensive burrowing by colonies of mountain beaver can destroy or mix soil layers that have taken many years to develop. The destruction or mixing of soil layers also can occur in areas where large trees are windthrown.

In areas where the growth of aerobic soil fauna is inhibited by wet and cold conditions, organic matter can accumulate. Lemolo, Nimue, and Haywire are examples of soils that are wet and cold and have a high organic matter content.

Mukilteo, Seattle, Shalcar, and Tukwila are examples of organic soils that formed in the accumulated remains of plants, such as sedges, rushes, and mosses, in bogs. These soils are saturated or nearly saturated most of the year. The saturation substantially slows the biological processes that break down organic material.

In the warmer areas at the lower elevations, plant material is decomposed by various fauna and incorporated into the mineral surface layer. This incorporation of organic matter results in a dark surface layer (mollic or umbric epipedon). This dark surface layer is evident in soils that are in areas where the original forest vegetation has been converted to pasture. Nooksack soils are an example.

Grasses and herbaceous plants are more easily decomposed than woody plants. Soils that formed under herbaceous vegetation have a dark mineral surface layer even in the colder zones where biological activity has been slowed. Treen soils are an example.

The soils at the lower elevations are in the western hemlock *(Tsuga heterophylla)* major forest zone *(15)*. Large areas of this zone, particularly at the lowest elevations, are dominated by Douglas fir *(Pseudotsuga menziesii)*. The forest floor in this zone typically has a "mull" layer of humus on the surface of the mineral soil. This layer is characteristic in areas where decomposition is rapid and where moisture and temperature favor rapid biological activity in the soil *(35)*. At the higher and cooler elevations in this zone, where western hemlock becomes the dominate tree species, a "duff mull" layer of humus is common. This layer tends to favor the development of Spodosols, such as Kaleetan and Melakwa soils. This tendency results from the more intense, shorter duration microfaunal activity in the "mor" portion of the "duff mull" layer.

The soils at the higher elevations are in the Pacific silver fir *(Abies amabilis)* major forest zone. The forest floor in this zone typically has a "mor" layer of humus on the surface of the mineral soil. This layer favors the podzolization process and the development of Spodosols, such as Cattcreek, Index, and Playco soils.

The soils at the highest elevations are in the mountain hemlock *(Tsuga mertensiana)* major forest zone. In this zone the "mor" layer of humus is thick. Cryohumods and Humic Cryorthods, such as Haywire, Serene, and Ethania soils, are typical.

Parent Material

Parent material is "the state of the soil system at time zero of soil formation" *(19)*. It is the material in which a soil forms. Examples are material weathered from rocks, plant material deposited in bogs, and alluvium. Parent material influences many soil properties. Generally, the younger the soil, the more influential the parent material *(5)*.

The survey area lies within two major physiographic and geologic sections. These are the Puget Trough section and the Northern Cascade Mountains section, which is divided into northern and southern subsections. Different types of parent material are in each of these areas. In addition to the materials dominant in each area, plant remains in bogs, glacial till, alluvium, proglacial lacustrine deposits, laharic deposits, and eolian volcanic ash deposits of Pleistocene age are throughout the survey area. The eolian ash was extensively deposited in the area. It influences the majority of the soils. Also, it is the primary parent material of some soils, such as Zynbar and Cattcreek soils.

The western part of the survey area is within the Puget Trough section. The influence of the parent material in this section extends to an elevation of approximately 1,600 feet. This section is the result of the invasion from the north of a lobe of the Cordilleran Icecap. The glacial advance and subsequent retreat occurred at least four times during the Pleistocene Epoch. The recession of the last of these glaciations began about 15,000 years ago. The topography and

geology now in evidence in the lowlands of the Puget Sound are almost exclusively the result of these glaciations *(14, 21)*.

The parent material in the Puget Trough section is glacial drift and related deposits. Soils that formed in recessional outwash deposits, such as Barneston soils, are coarse textured and somewhat excessively drained. The sequence of their layers varies greatly. Soils that formed in glacial till, such as Alderwood and Tokul soils, commonly have a layer of hard ortstein within a depth of 3 feet and are moderately well drained. The layer of ortstein restricts root development and the downward movement of water. The top of this layer marks the boundary between intact lodgment till and either ablation material or lodgment till that has been loosened by tree roots. In Tokul soils the material above the lodgment till is strongly influenced by volcanic ash deposits that impart medial properties, such as a high available water capacity.

Alderwood and Tokul soils formed in till of the Fraser glaciation, which is the most recent glaciation. Mashel soils formed in till of one of the much older glaciations. This till has been extensively weathered, and a consolidated contact is not evident in the soil profile. These soils are finer textured throughout than the soils that formed in the till of more recent glaciations. Nargar, Neilton, and Lynnwood are examples of soils that formed in glacial outwash deposits. They are sandy throughout.

The fine textured Scamman soils, which are in the southwestern part of the survey area, formed mostly in fine textured, proglacial lake sediments. The Cordilleran Ice Sheet produced a very efficient dam across the mountain valleys, impounding the alpine drainageways *(23)* and creating a lake in each valley, including the valleys of the Skykomish and Snoqualmie Rivers. The moderately coarse textured Klaus soils formed in deltaic deposits in areas where tremendous deltas were built up at the mouth of each valley. These deposits are still evident. They consist of very coarse beds of gravel and sand, which dip upvalley. Pastik and Rober soils formed in remnant deposits of fine grained sediments that were deposited in the lakes farther up the major river valleys. Postglacial erosion has removed most of these fine sediments.

The survey area is divided between the southern and northern parts of the Northern Cascade Mountains section. The division between these parts is a boundary extending from east to west through Snoqualmie Pass. North of this boundary the mountains are made up of crystalline, intrusive granitics and a full spectrum of metamorphic rock types, primarily of Mesozoic age. South of this boundary the rocks are younger (Cenozoic) and of volcanic and sedimentary origin.

The northern Cascades were subject to extensive alpine glaciation during the Pleistocene. Many soils formed in the resultant glacial drift and till. Examples are Chinkmin, Kindy, and Philippa soils.

The part of the northern Cascades that is within the survey area has received deposits of tephra since the end of the Pleistocene. The source of the tephra has been volcanic eruptions of Mount Mazama at Crater Lake, Oregon, and perhaps of Glacier Peak and Mount St. Helens. The upper horizons of many of the soils in this part of the survey area formed exclusively in the deposits of tephra.

One of the major bedrock units in the northern part of the survey area is the Snoqualmie Batholith. This unit includes granite, granodiorite, and tonalite. Soils that formed in material weathered from these granitic rocks tend to be coarse textured, permeable, and acid and have a low base status *(5)*. Altapeak and Serene soils are examples. Similar soils formed in material weathered from the granodiorite of the Mount Stuart Batholith in the vicinity of Stevens Pass.

In the area near Stevens Pass, Altapeak, Serene, Index, Klapatche, Teneriffe, and Marblemount soils formed in material weathered from greenschists and phyllites of the Easton Schist Formation. The rocks of the formation are thin, platy, and metamorphic. The substratum of the resultant soils tends to be channery; that is, it has many thin, flat rock fragments that are smaller than 3 inches in diameter.

Soils that formed in the gneissic parent materials generally have a finer texture than that of soils that formed in the other materials in the northern subsection. Nimue, Haywire, Playco, and Nagrom soils tend to correlate with the soils that formed in the parent materials of the southern subsection.

Extrusive igneous rocks of Cenozoic age are virtually the only types of rock in the part of the survey area south of Snoqualmie Pass, except for of a small band of sedimentary rocks, which are also of Cenozoic (Eocene) age. Much of the bedrock has been covered by alpine glacial deposits and lahar and some tephra.

Several of the lithologic formations in the southern subsection contain significant amounts of volcaniclastic rocks, including tuff breccia, volcanic breccia, conglomerate, sandstone, and siltstone. Soils that formed in material weathered from the residual and colluvial rock derived from these volcaniclastics have a very different substratum than that of different phases of the same soils that formed in the andesite and basalt in the area. They are identified as the "tuff substratum" phases of their companion soils, which formed in andesite. Generally, the volcaniclastics are relatively soft and weather more rapidly than the andesitics.

Jonas, Littlejohn, Pitcher, and Pheeney soils formed

in material weathered from andesite. They are finer textured than the soils that formed in material weathered from the granitic rocks of the northern subsection. The finer textures and the influence of volcanic ash result in a higher available water capacity and an elevated nutrient status. Cubic rock fragments that have jagged points resulting from hackly fracture of the parent rock are common in the substratum and underlying bedrock of the soils that formed in andesite.

Some soils in the survey area formed in material weathered from Eocene-age sedimentary rocks and in volcanic ash. Vailton soils are an example. The sedimentary rocks are Puget Group sediments made up of sandstone, siltstone, claystone, carbonaceous shale, and coal. The texture of the substratum in these soils and the type of underlying bedrock tend to vary. In areas where the bedrock is claystone or siltstone, the substratum is farther from the surface than in areas where the bedrock is sandstone. Also, the bedrock is less consolidated. The hardness of the sandstone varies. Vailton soils are in the southeastern part of the survey area. Beausite soils formed in similar kinds of parent material, but they are at the lower elevations and in areas of lower relief. They are along the western margin of the survey area, in King County.

As in the northern subsection, much of the bedrock in the southern subsection has received deposits of tephra. The source of this tephra has been the volcanic eruptions of Mount Mazama 6,600 years ago, of Mount St. Helens 450 and 3,000 years ago, and perhaps of Mount Rainier. The eruption of Mount St. Helens in May of 1980 deposited little or no ash in the survey area.

Almost all of the soils in the mountainous parts of the southern subsection formed partially in tephra or at least have tephra incorporated in the upper part. The upper layers of many soils formed exclusively in tephra, which blankets the surface. Cattcreek, Cotteral, Bromo, and Bellicum soils formed mainly in a thick layer of lapilli, which is pyroclastic layer Y of the Mount St. Helens eruption of 3,000 years ago.

Soils that formed in thick deposits of fine ash have a loamy feel after rubbing but have distinctive properties. They have a "smeary" or "greasy" feel when squeezed, have a low bulk density, a high available water capacity, and a high cation-exchange capacity. Cinebar and Zynbar soils are examples.

Volcanic ash and lapilli are incorporated into the colluvial material and blanket the upper few inches of Nimue, Haywire, Playco, and Nagrom soils. The surface layer of these soils is loam or loamy sand. In this survey the term *cinders* has been used to describe the lapilli. Although this material generally is the size of fine gravel, most of the particles crush under a load.

Deposits from two volcanic mudflows, or lahars, are in the survey area. The largest of these is the Osceola mudflow deposit, which came from a lahar that originated on Mount Rainier and flowed down the valley of the White River about 5,000 years ago. The Electron mudflow occurred only about 600 years ago. It also originated on Mount Rainier, but it traveled down the valley of the Puyallup River. Lemolo, Mowich, Ohop, and Pierking soils formed in these lahars. The unweathered part of these lahars tends to be so dense that it impedes the downward movement of water through the soil. Because of the dense parent material and the low gradient of the surface that resulted from the deposition, Lemolo and Pierking soils are Aquepts and Mowich soils are an aquic intergrade. Ohop soils are better drained than the other soils that formed in the lahars because of their slightly higher position on the landscape.

Elwell, Dobbs, Mashel, and Oakes soils formed in surficial deposits of alpine glacial origin in the southern part of the survey area and in similar deposits of alpine glacial till further north *(12)*. Kindy, Chinkmin, and Philippa soils, all of which have a spodic horizon, formed in alpine glacial till in the northern part of the survey area. They are influenced by incorporated volcanic ash deposits. Because these tills are more local in origin than those of the Puget Trough section, they reflect the features of the dominant rock of which they are composed. In many parts of the survey area, the coarse textured Skykomish soils formed in alpine glacial outwash on terraces. These soils are Typic Haplorthods.

Organic soils (Histosols) form wherever the rate of accumulation of organic matter exceeds the rate of mineralization. This formation usually occurs under conditions of almost continuous saturation, which curtails the circulation of oxygen through the soil *(5)*. Seattle, Shalcar, and Tukwila soils formed in highly decomposed plant remains. They have a mesic soil temperature regime. Mukilteo peat is an organic soil that consists mainly of recognizable fibers of moss.

Geomorphology

This survey area can be divided, in a general sense, into two large geomorphic sections. These are the Puget Trough section and the Northern Cascade Mountains section, which is further divided into northern and southern subsections. Each of these broad areas has a significantly different topography, resulting mainly from the kinds of primary parent materials that occur within the section and the action of climatic events on these materials over time.

The lowlands of the Puget Trough section in the western part of the survey area dominantly consist of

glacial drift plains, kame terraces, glacial lake deltas, ice-marginal stream terraces, and postglacial river terraces. Minor features include eskers, remnant lacustrine plains, kettle lakes, moraines, and the resultant plain of the Osceola volcanic mudflow. Alderwood and Tokul soils formed on the nearly level to sloping glacial drift plains. Because of low relief and a restrictive layer within the soil profile, they are moderately well drained.

Numerous bogs have formed in the low areas on the undulating drift plains. Seattle and Shalcar soils are examples of Histosols that formed in these depressions. They are between areas of the mineral Tokul soils, which are higher on the landscape. Organic soils also formed in other depressions, in small kettles, and around kettle lakes on kame terraces and outwash plains.

Barneston, Skykomish, and Winston soils formed on kame terraces, outwash plains, and ice-marginal stream terraces. Klaus soils formed on glacial outwash terraces that were downcut by postglacial streams and rivers. As a result of this downcutting, alluvium overlies glacial outwash on the river terraces. The discontinuity between the alluvium and the outwash deposits restricts the downward movement of water in the soil and assists in the formation of the spodic horizon and the ortstein in the Klaus soils.

Erosion other than that caused by major river and stream downcutting has not significantly affected soil formation in the lowlands of the Puget Trough section.

Mashel soils formed in the Wingate Hill Drift *(12)*. This drift is derived from an alpine glaciation of Salmon Springs age, which was 35,000 to 50,000 years ago. These soils are deeply weathered and do not have a recognizable layer of compact till. The surface of the soils has been stable for a considerable period. This topographic surface is on the margin of the lowlands and is considered to be in the southern part of the Northern Cascade Mountains section.

The southern part of the Northern Cascade Mountains section is characterized by generally accordant ridge crests separated by steep, deeply dissected valleys *(15)*. Many valley sidewalls are mantled by alpine glacial till or by mudflow. Slumps and earthflows are common topographic features, perhaps because of the bedded nature of the varied andesite and volcaniclastic flows that make up the bedrock. Foss, Pitcher, and Reichel soils are exclusively in areas of large slumps and earthflow deposits. Many of the large earthflow deposits exhibit hummocky terrain *(6)*.

Ovall, Pheeney, Littlejohn, Haywire, and Nagrom soils are on ridge crests and in areas that are subject to severe geologic erosion. The erosional process led to the formation of Greenwater and National soils, which formed in alluvium containing tephra. The colluvial process contributed to the incorporation of tephra into the solum of the Playco, Nagrom, Nimue, Haywire, Pitcher, and Littlejohn soils.

The northern part of the survey area exhibits topography that is typical of the Northern Cascade Mountains section. It has deep, steep-sided, U-shaped valleys. Exposed bedrock is common on ridges at the higher elevations. Numerous talus slopes are on the valley sidewalls. Hanging valleys and truncated spur ridges are common on the sidewalls of the major valleys. Cirque basins, many containing tarns or small lakes, are numerous on the north-facing sides of the major mountain ridges. In contrast, such cirques are uncommon in the southern part of the survey area and are not necessarily oriented to the north.

Many of the cirque basins have bogs where Cryohemists formed in areas that formerly were tarns. In many places these organic soils formed because the nearly level surface of the bottom of the basin is underlain by compact alpine glacial till and the mouth of the basin is blocked by a moraine. These conditions created a wet environment that slowed the decomposition of organic material and permitted this material to accumulate *(4)*.

Snow avalanching is a dominant, ongoing process that affects the topography of the northern part of the survey area. About 2,700 acres in the survey area is within active avalanche chutes. The soils in these chutes are Orthents, which are very recent soils that do not show any discernible evidence of horizon development. In the deposition zone of the avalanches, at the bottom of the chute, small areas of organic soils are common. These organic soils formed in material that was removed from the slope by avalanches and deposited on a wet site.

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Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Accordant. The same elevation or nearly the same elevation.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aerobic. Having molecular oxygen as a part of the environment.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Aquic. A mostly reducing soil moisture regime that is nearly free of dissolved oxygen because of saturation by ground water or its capillary fringe and that occurs when the soil temperature at a depth of 50 centimeters is above 5 degrees C.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A mineral soil horizon that is characterized by the illuvial accumulation of layer-lattice silicate clays. The argillic horizon has a certain minimum thickness, depending on the thickness of the solum; has a minimum quantity of clay in comparison with an overlying eluvial horizon; and generally has coatings of oriented clay on the surface of pores or peds or bridging sand grains.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and

other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to reduce or eliminate competition from woody vegetation, in order to allow understory grasses and forbs to recover, or to make conditions favorable for reseeding. It increases forage production and thus reduces the hazard of erosion. Brush management can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Cambic horizon. A mineral soil horizon that is loamy very fine sand or finer textured, has soil structure rather than rock structure, contains some weatherable minerals, and is characterized by the alteration or removal of mineral material as indicated by mottling or gray colors, stronger chromas or redder hues than in underlying horizons, or removal of carbonates. The cambic horizon lacks cementation or induration and has too little evidence of illuviation to meet the requirements of an argillic or spodic horizon.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep narrow, very steep-sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cenozoic. Relating to a grand division of geological history that includes the entire interval from the beginning of the Tertiary period to the present.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation by use of chemicals.

Cirque. A semicircular, concave, bowllike area that has steep faces primarily resulting from glacial ice and snow abrasion.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Colluvium. Soil material, rock fragments, or both

moved by creep, slide, or local wash and deposited at the base of steep slopes.

Commercial forest. Forest that is capable of producing merchantable timber, is currently or prospectively accessible, and is not withdrawn from timber production.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conglomerate. A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer material. Conglomerate is the consolidated equivalent of gravel.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cryic. A soil temperature regime that has a mean annual soil temperature of more than 0 but less than 8 degrees C, a difference of more than 5 degrees C between the mean summer and the mean winter soil temperature at a depth of 50 centimeters, and a cold summer temperature.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Delta. A body of alluvium whose surface is nearly flat and fan shaped, deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming with the dip of underlying bedded rock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused

by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.

Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.

Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.

Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley, generally more open and with broader bottom land than a ravine or gulch.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Duff. A term used to identify a generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Duff mull. A type of forest humus transitional between mull and mor. Duff mull has an h layer and an f layer as well as an A1 horizon.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of people and equipment in fire fighting. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frigid. A soil temperature regime that has a mean annual soil temperature of more than 0 but less than 8 degrees C, a difference of more than 5 degrees C between the mean summer and the mean winter soil temperatures at a depth of 50 centimeters, and a warm summer temperature. An isofrigid regime has similar characteristics, but the summer and winter temperatures differ by less than 5 degrees C.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hanging valley. A tributary valley whose lower end is notably higher than the level of the main valley or a coastal valley whose lower end is notably higher than the shore to which it leads.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hard rock. Rock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is

absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lahar. Mudflow made up chiefly of volcaniclastic material on the flank of a volcano. The debris carried in the flow includes pyroclastic material, blocks from primary lava flows, and epiclastic material.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Lapilli. Pyroclastics that may be either essential, accessory, or accidental in origin and that range in size from 1 to 64 millimeters in diameter. The fragments may be either solidified or still viscous when they land (though some classifications restrict the term to the former); thus, there is no characteristic shape. An individual fragment is called a *lapillus.*

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand or loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Lodgement till. Unstratified glacial drift that was deposited directly by the ice. It consists of clay, sand, gravel, and boulders intermingled in any proportion.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medial. Characterized by a fine-earth fraction that seems loamy to the touch; less than 60 percent (by weight) volcanic ash, cinders, and pumice; and less than 35 percent (by volume) 2 millimeters in diameter or larger.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesic. A soil temperature regime that has a mean annual soil temperature of 8 degrees C or more but less than 15 degrees C and a difference of more than 5 degrees C between the mean summer and the mean winter soil temperature at a depth of 50 centimeters. An isomesic regime is similar, but the summer and winter temperatures differ by less than 5 degrees C.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A surface horizon of mineral soil that is dark and relatively thick, contains at least 0.58 percent organic carbon, is not massive or hard or very hard when dry, has a base saturation of more than 50 percent when measured at pH 7, has less than 250 parts per million of P_2O_5 soluble in 1 percent citric acid, and is dominantly saturated with bivalent cations.

Mor. A type of forest humus in which an h layer occurs and in which there is practically no mixing of surface organic matter with mineral soil; that is, the transition from the h layer to the A1 horizon is abrupt. (Sometimes differentiated into thick mor, thin mor, granular mor, greasy mor, or felty mor.)

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Mull. A type of forest humus in which an f layer may or may not be present and in which there is no h layer. The A1 horizon consists of thoroughly mixed organic matter and mineral soil. The transition between the A1 horizon and the horizon beneath is gradual. (Sometimes differentiated into firm mull, sand mull, coarse mull, medium mull, and fine mull.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Mycorrhizal. The symbiotic association of the mycelium of a fungus with the roots of a seed plant.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Ochric epipedon. A surface horizon of mineral soil that is too light in color, too high in chroma, too low in organic carbon, or too thin to be a plaggen, mollic, umbric, anthropic, or histic epipedon or that is both hard and massive when dry.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is also exposed to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Podzolization. A process of soil formation resulting in the genesis of Podzols and Podzolic soils.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Post and piling outlet. A market location where posts and pilings are bought, processed, and sold.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending

through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sesquioxide. An oxide containing three atoms of oxygen combined with two of the other constituents in the molecule.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Sidecast material. Soil material that has been pushed by equipment over the downhill side of a road during construction.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average heights of dominant trees for the range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level	0 to 5 percent
Gently sloping	5 to 10 percent
Moderately sloping	10 to 15 percent
Strongly sloping	15 to 30 percent
Moderately steep	30 to 40 percent
Steep	40 to 60 percent
Very steep	60 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft rock. Rock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the Earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation

are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Spodic horizon. A mineral soil horizon that is characterized by the illuvial accumulation of amorphous material made up of aluminum and organic carbon with or without iron. The spodic horizon has a certain minimum thickness and a minimum quantity of extractable carbon plus iron plus aluminum in relation to its content of clay.

Spur. A secondary divide between minor drainage systems that generally has an inverted "V" shape and occurs considerably below the elevation of the associated ridge.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Tailwater. The water just downstream of a structure.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep, rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

Tarn. A small, steep-banked mountain lake or pool.

Tephra. Fragmental volcanic debris that is transported from the crater through the air. Tephra does not denote properties of composition, vesicularity, or grain size.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Udic. A soil moisture regime that is dry neither for as long as 90 cumulative days nor for as long as 60 consecutive days in the 90 days following the summer solstice during periods when the soil

temperature at a depth of 50 centimeters is above 5 degrees C.

Umbric epipedon. A surface layer of mineral soil that has the same requirements as the mollic epipedon with respect to color, thickness, organic carbon content, consistence, structure, and P_2O_5 content but that has a base saturation of less than 50 percent when measured at pH 7.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer of a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The action of uprooting and tipping over trees by wind.

Xeric. A soil moisture regime common to Mediterranean climates that have moist, cool winters and warm, dry summers. A limited amount of moisture is evident but does not occur during optimal periods for plant growth. Irrigation or summer fallow is commonly necessary for crop production.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1970-78 at Baring, 1951-78 at Electron Headworks, and 1952-70 at Snoqualmie Pass)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
BARING:											
January----	39.3	28.9	34.1	56	13	14	19.38	10.23	27.41	18	23.7
February---	45.8	32.2	39.0	61	18	65	12.24	5.23	18.18	16	7.8
March------	49.5	32.9	41.2	68	21	98	11.31	7.79	14.54	15	4.9
April------	57.3	35.7	46.5	79	27	207	7.18	3.89	10.07	13	1.1
May--------	65.0	41.1	53.1	92	31	406	5.36	3.43	7.09	12	.0
June-------	68.9	47.0	58.0	91	34	540	3.53	2.03	4.85	9	.0
July-------	74.3	50.3	62.3	92	39	691	2.32	.78	3.57	5	.0
August-----	73.3	51.1	62.2	93	41	688	3.51	.81	5.63	6	.0
September--	68.2	46.2	57.2	89	33	516	5.63	1.44	8.96	6	.0
October----	58.9	39.7	49.3	82	27	288	8.07	2.64	12.52	10	.0
November---	45.4	34.0	39.7	63	18	76	16.15	9.50	22.09	17	7.8
December---	39.9	30.6	35.3	55	11	48	19.54	13.09	25.42	19	16.1
Yearly:											
Average---	57.2	39.1	48.2	---	---	---	---	---	---	---	---
Extreme---	---	---	---	95	8	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,637	114.22	94.22	135.14	146	61.4
ELECTRON HEADWORKS:											
January----	39.0	28.2	33.6	55	7	16	11.34	3.80	17.54	15	11.9
February---	43.5	30.9	37.2	57	13	27	5.92	2.74	8.66	13	7.5
March------	46.5	31.4	39.0	64	14	62	6.19	3.77	8.35	16	9.6
April------	53.9	33.2	43.6	76	25	128	4.07	1.94	5.91	12	2.4
May--------	62.3	38.2	50.3	89	29	319	4.07	2.55	5.44	11	.0
June-------	67.5	43.2	55.4	87	32	462	3.09	1.70	4.30	7	.0
July-------	74.5	46.8	60.7	92	35	642	1.11	.32	1.75	4	.0
August-----	73.3	46.5	59.9	95	36	617	2.57	.39	4.20	6	.0
September--	66.2	41.7	54.0	87	30	420	3.23	.86	5.11	8	.0
October----	55.1	35.7	45.4	74	24	169	4.06	1.77	6.01	9	.2
November---	43.9	31.6	37.8	60	16	35	8.21	5.10	10.99	15	5.9
December---	39.9	29.8	34.9	56	8	35	9.83	4.92	14.08	17	10.9
Yearly:											
Average---	55.5	36.4	46.0	---	---	---	---	---	---	---	---
Extreme---	---	---	---	96	2	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,932	63.69	49.19	77.31	133	48.4

See footnote at end of table.

TABLE 1.--TEMPERATURE AND PRECIPITATION--Continued

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
SNOQUALMIE PASS:											
January----	32.4	21.5	27.0	48	-4	17	18.31	10.95	24.90	21	133.7
February---	38.3	24.8	31.6	53	4	14	11.94	7.73	15.75	16	85.9
March------	42.3	25.4	33.9	60	5	9	10.40	5.45	14.73	16	96.1
April------	48.2	29.9	39.1	70	16	51	7.37	4.28	10.12	13	34.7
May--------	57.0	34.6	45.8	80	23	210	3.76	1.66	5.55	9	6.3
June-------	63.3	40.7	52.0	86	31	371	3.35	1.74	4.83	8	.3
July-------	70.1	45.7	57.9	93	35	555	1.52	.31	2.46	4	.5
August-----	69.0	46.1	57.6	92	35	546	2.31	.47	3.75	6	.0
September--	64.5	41.8	53.2	86	30	400	5.37	1.92	8.24	8	.0
October----	53.0	35.4	44.2	74	25	147	9.64	4.88	13.78	12	9.1
November---	39.4	27.9	33.7	58	10	17	14.50	7.65	20.50	16	47.7
December---	33.8	25.0	29.4	48	2	18	17.06	12.07	21.66	21	99.9
Yearly:											
Average---	50.9	33.2	42.1	---	---	---	---	---	---	---	---
Extreme---	---	---	---	93	-8	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,355	105.53	87.11	125.59	150	514.2

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1970-78 at Baring, 1951-78 at Electron Headworks, and 1952-70 at Snoqualmie Pass)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
BARING:			
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 12	Apr. 15	May 26
2 years in 10 later than--	Mar. 3	Apr. 7	May 18
5 years in 10 later than--	Feb. 13	Mar. 22	May 4
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 1	Oct. 25	Sept. 21
2 years in 10 earlier than--	Nov. 8	Nov. 1	Sept. 27
5 years in 10 earlier than--	Nov. 24	Nov. 15	Oct. 10
ELECTRON HEADWORKS:			
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 15	May 18	June 8
2 years in 10 later than--	Apr. 4	May 12	June 2
5 years in 10 later than--	Mar. 16	Apr. 30	May 23
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 16	Sept. 27	Aug. 20
2 years in 10 earlier than--	Oct. 29	Oct. 4	Aug. 30
5 years in 10 earlier than--	Nov. 22	Oct. 18	Sept. 18

TABLE 2.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
SNOQUALMIE PASS:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 7	June 6	June 16
2 years in 10 later than--	Apr. 29	May 29	June 9
5 years in 10 later than--	Apr. 14	May 14	May 26
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 28	Sept. 28	Aug. 6
2 years in 10 earlier than--	Nov. 3	Oct. 5	Aug. 19
5 years in 10 earlier than--	Nov. 13	Oct. 20	Sept. 13

TABLE 3.--GROWING SEASON

(Recorded in the period 1970-78 at Baring, 1951-78 at Electron Headworks, and 1952-70 at Snoqualmie Pass)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
BARING:			
9 years in 10	252	204	128
8 years in 10	262	215	139
5 years in 10	283	237	159
2 years in 10	307	259	178
1 year in 10	>365	271	189
ELECTRON HEADWORKS:			
9 years in 10	206	145	78
8 years in 10	222	187	92
5 years in 10	251	171	117
2 years in 10	280	187	143
1 year in 10	295	196	156
SNOQUALMIE PASS:			
9 years in 10	181	125	65
8 years in 10	192	136	80
5 years in 10	212	158	109
2 years in 10	233	179	138
1 year in 10	244	191	153

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	King County	Pierce County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
1	Alderwood gravelly loam, 6 to 15 percent slopes	2,562	5	2,567	0.2
2	Alderwood gravelly loam, 15 to 30 percent slopes	763	185	948	0.1
3	Alkiridge sandy loam, 8 to 30 percent slopes	152	2,847	2,999	0.3
4	Altapeak gravelly sandy loam, 8 to 30 percent slopes	1,601	0	1,601	0.1
5	Altapeak gravelly sandy loam, 30 to 65 percent slopes	13,364	1,515	14,879	1.3
6	Altapeak gravelly sandy loam, 65 to 90 percent slopes	2,113	31	2,144	0.2
7	Altapeak-Rock outcrop complex, 45 to 90 percent slopes	3,503	454	3,957	0.3
8	Andic Cryumbrepts, 30 to 90 percent slopes	409	2,385	2,794	0.2
9	Arents, 0 to 8 percent slopes	881	222	1,103	0.1
10	Barneston gravelly coarse sandy loam, 0 to 6 percent slopes	4,631	5	4,636	0.4
11	Barneston gravelly coarse sandy loam, 6 to 30 percent slopes	15,051	4,588	19,639	1.7
12	Barneston gravelly coarse sandy loam, 30 to 65 percent slopes	2,156	1,080	3,236	0.3
13	Barneston gravelly sandy loam, 0 to 8 percent slopes	16,575	0	16,575	1.4
14	Barneston gravelly sandy loam, 8 to 30 percent slopes	3,821	0	3,821	0.3
15	Barneston gravelly sandy loam, 30 to 65 percent slopes	4,964	0	4,964	0.4
16	Barneston gravelly sandy loam, windswept, 6 to 30 percent slopes	1,014	0	1,014	0.1
17	Beausite gravelly loam, 6 to 30 percent slopes	467	0	467	*
18	Beausite gravelly loam, 30 to 65 percent slopes	3,272	0	3,272	0.3
19	Beausite gravelly loam, 65 to 90 percent slopes	0	3,455	3,455	0.3
20	Belfast silt loam, 0 to 2 percent slopes	340	14	354	*
21	Bellicum very cindery loamy sand, 8 to 30 percent slopes	0	1,111	1,111	0.1
22	Bellicum very cindery loamy sand, 30 to 65 percent slopes	0	3,946	3,946	0.3
23	Blethen gravelly loam, 5 to 30 percent slopes	8,052	0	8,052	0.7
24	Blethen gravelly loam, 30 to 65 percent slopes	10,752	0	10,752	0.9
25	Borohemists, 0 to 2 percent slopes	368	440	808	0.1
26	Bromo very cindery sandy loam, 30 to 65 percent slopes	0	738	738	0.1
27	Cattcreek very cindery loamy sand, 30 to 65 percent slopes	0	2,971	2,971	0.3
28	Cattcreek very cindery loamy sand, 65 to 90 percent slopes	0	750	750	0.1
29	Cattcreek very cindery loamy sand, sandstone substratum, 30 to 65 percent slopes	0	2,513	2,513	0.2
30	Cattcreek very cindery loamy sand, sandstone substratum, 65 to 90 percent slopes	0	609	609	0.1
31	Cattcreek very cindery loamy sand, till substratum, 8 to 30 percent slopes	0	3,449	3,449	0.3
32	Cayuse sandy loam, 8 to 30 percent slopes	0	608	608	0.1
33	Cayuse sandy loam, 30 to 65 percent slopes	0	2,526	2,526	0.2
34	Chinkmin sandy loam, 0 to 15 percent slopes	2,015	525	2,540	0.2
35	Chinkmin sandy loam, 15 to 30 percent slopes	8,689	2,157	10,846	0.9
36	Chinkmin sandy loam, 30 to 65 percent slopes	4,370	549	4,919	0.4
37	Chinkmin sandy loam, cold, 0 to 15 percent slopes	782	0	782	0.1
38	Chinkmin sandy loam, cold, 15 to 30 percent slopes	624	22	646	0.1
39	Christoff sandy loam, 6 to 30 percent slopes	1,571	0	1,571	0.1
40	Christoff sandy loam, 30 to 65 percent slopes	524	0	524	*
41	Chuckanut loam, 6 to 15 percent slopes	972	0	972	0.1
42	Chuckanut loam, 15 to 30 percent slopes	2,359	0	2,359	0.2
43	Chuckanut loam, 30 to 65 percent slopes	1,115	58	1,173	0.1
44	Cinebar silt loam, 6 to 15 percent slopes	0	2,659	2,659	0.2
45	Cinebar silt loam, 15 to 30 percent slopes	24	318	342	*
46	Cinebar silt loam, 30 to 45 percent slopes	231	643	874	0.1
47	Cotteral very cindery sandy loam, 8 to 30 percent slopes	0	547	547	*
48	Cotteral very cindery sandy loam, cold, 30 to 65 percent slopes	0	350	350	*
49	Crinker very channery loam, 30 to 65 percent slopes	1,694	0	1,694	0.1
50	Cryofluvents, 0 to 8 percent slopes	673	720	1,393	0.1
51	Cryohemists, 0 to 2 percent slopes	395	870	1,265	0.1
52	Dobbs loam, 8 to 30 percent slopes	0	300	300	*

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	King County	Pierce County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
53	Edgewick silt loam, 0 to 3 percent slopes	3,707	0	3,707	0.3
54	Elwell silt loam, 6 to 30 percent slopes	6,531	8,163	14,694	1.2
55	Elwell silt loam, 30 to 65 percent slopes	2,692	1,288	3,980	0.3
56	Ethania very cindery loamy sand, 30 to 65 percent slopes	0	2,447	2,447	0.2
57	Ethania very cindery loamy sand, 65 to 90 percent slopes	0	2,264	2,264	0.2
58	Ethania very cindery loamy sand, sandstone substratum, 30 to 65 percent slopes	0	5,091	5,091	0.4
59	Ethania very cindery loamy sand, sandstone substratum, 65 to 90 percent slopes	0	1,348	1,348	0.1
60	Ethania very cindery loamy sand, till substratum, 8 to 30 percent slopes	0	2,989	2,989	0.3
61	Foss stony sandy loam, 8 to 30 percent slopes	0	1,247	1,247	0.1
62	Foss stony sandy loam, 30 to 65 percent slopes	97	296	393	*
63	Gallup loam, 6 to 30 percent slopes	2,001	0	2,001	0.2
64	Gallup loam, 30 to 65 percent slopes	992	0	992	0.1
65	Gallup loam, breccia substratum, 30 to 65 percent slopes	351	0	351	*
66	Getchell loam, 6 to 15 percent slopes	1,268	0	1,268	0.1
67	Getchell loam, 15 to 30 percent slopes	1,715	0	1,715	0.1
68	Getchell loam, 30 to 65 percent slopes	543	0	543	*
69	Greenwater loamy sand, 0 to 8 percent slopes	48	1,206	1,254	0.1
70	Grotto gravelly loamy sand, 0 to 8 percent slopes	2,875	4,211	7,086	0.6
71	Hartnit loam, 8 to 30 percent slopes	501	0	501	*
72	Haywire sandy loam, 8 to 30 percent slopes	705	906	1,611	0.1
73	Haywire sandy loam, 30 to 65 percent slopes	10,506	6,970	17,476	1.5
74	Haywire loamy sand, tuff substratum, 8 to 30 percent slopes	323	918	1,241	0.1
75	Haywire loamy sand, tuff substratum, 30 to 65 percent slopes	4,017	4,587	8,604	0.7
76	Hinker gravelly sandy loam, 8 to 30 percent slopes	796	0	796	0.1
77	Hinker gravelly sandy loam, 30 to 65 percent slopes	1,998	877	2,875	0.2
78	Hinker gravelly sandy loam, 65 to 90 percent slopes	287	0	287	*
79	Humaquepts, 0 to 5 percent slopes	1,030	4,004	5,034	0.4
80	Index loamy sand, 8 to 30 percent slopes	449	0	449	*
81	Index loamy sand, 30 to 65 percent slopes	13,348	1,255	14,603	1.2
82	Index loamy sand, 65 to 90 percent slopes	1,533	0	1,533	0.1
83	Index-Rock outcrop complex, 45 to 90 percent slopes	1,969	753	2,722	0.2
84	Jonas gravelly loam, tuff substratum, 15 to 30 percent slopes	95	1,699	1,794	0.2
85	Jonas gravelly loam, tuff substratum, 30 to 65 percent slopes	0	3,270	3,270	0.3
86	Jonas gravelly silt loam, 15 to 30 percent slopes	373	3,040	3,413	0.3
87	Jonas gravelly silt loam, 30 to 65 percent slopes	564	13,201	13,765	1.2
88	Jonas gravelly silt loam, 65 to 90 percent slopes	0	850	850	0.1
89	Kaleetan sandy loam, 8 to 30 percent slopes	2,831	0	2,831	0.2
90	Kaleetan sandy loam, 30 to 65 percent slopes	23,169	0	23,169	2.0
91	Kaleetan sandy loam, windswept, 30 to 65 percent slopes	953	0	953	0.1
92	Kaleetan sandy loam, till substratum, 8 to 30 percent slopes	6,492	0	6,492	0.5
93	Kaleetan sandy loam, till substratum, 30 to 65 percent slopes	6,178	0	6,178	0.5
94	Kaleetan sandy loam, tuff substratum, 8 to 30 percent slopes	400	0	400	*
95	Kaleetan sandy loam, tuff substratum, 30 to 65 percent slopes	3,521	0	3,521	0.3
96	Kanaskat gravelly sandy loam, 0 to 30 percent slopes	1,719	187	1,906	0.2
97	Kanaskat gravelly sandy loam, 30 to 65 percent slopes	3,848	311	4,159	0.4
98	Kanaskat gravelly sandy loam, tuff substratum, 8 to 30 percent slopes	230	0	230	*
99	Kanaskat gravelly sandy loam, tuff substratum, 30 to 65 percent slopes	1,148	0	1,148	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	King County	Pierce County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
100	Kapowsin gravelly loam, 6 to 15 percent slopes	0	480	480	*
101	Kapowsin gravelly loam, 15 to 30 percent slopes	0	1,202	1,202	0.1
102	Kapowsin gravelly loam, 30 to 65 percent slopes	0	601	601	0.1
103	Kindy gravelly loam, 0 to 15 percent slopes	932	61	993	0.1
104	Kindy gravelly loam, 15 to 30 percent slopes	2,634	1,061	3,695	0.3
105	Kindy gravelly loam, 30 to 65 percent slopes	934	519	1,453	0.1
106	Klaber silt loam, 0 to 8 percent slopes	1,038	1,211	2,249	0.2
107	Klaber-Cinebar silt loams, 0 to 8 percent slopes	0	1,438	1,438	0.1
108	Klapatche laomy sand, 8 to 30 percent slopes	746	0	746	0.1
109	Klapatche loamy sand, 30 to 65 percent slopes	7,762	517	8,279	0.7
110	Klapatche-Rock outcrop complex, 45 to 90 percent slopes	3,684	124	3,808	0.3
111	Klaus sandy loam, 0 to 8 percent slopes	11,527	0	11,527	1.0
112	Klaus sandy loam, 8 to 15 percent slopes	464	0	464	*
113	Klaus sandy loam, 30 to 65 percent slopes	1,465	0	1,465	0.1
114	Klaus sandy loam, windswept, 0 to 8 percent slopes	716	0	716	0.1
115	Klaus sandy loam, windswept, 30 to 65 percent slopes	360	0	360	*
116	Larrupin loamy sand, 3 to 30 percent slopes	0	2,171	2,171	0.2
117	Larrupin loamy sand, 30 to 65 percent slopes	0	1,589	1,589	0.1
118	Larrupin loamy sand, hard substratum, 6 to 30 percent slopes	0	1,663	1,663	0.1
119	Lemolo silt loam, 0 to 8 percent slopes	2,757	764	3,521	0.3
120	Littlejohn gravelly sandy loam, 8 to 30 percent slopes	85	333	418	*
121	Littlejohn gravelly sandy loam, 30 to 65 percent slopes	5,063	1,233	6,296	0.5
122	Littlejohn gravelly sandy loam, windswept, 30 to 65 percent slopes	261	0	261	*
123	Littlejohn gravelly sandy loam, tuff substratum, 8 to 30 percent slopes	204	82	286	*
124	Littlejohn gravelly sandy loam, tuff substratum, 30 to 65 percent slopes	3,252	1,630	4,882	0.4
125	Littlejohn gravelly sandy loam, tuff substratum, windswept, 30 to 65 percent slopes	328	0	328	*
126	Littlejohn-Rock outcrop complex, 30 to 90 percent slopes	2,899	502	3,401	0.3
127	Lynnwood loamy fine sand, 6 to 15 percent slopes	92	722	814	0.1
128	Marblemount gravelly loamy sand, 8 to 30 percent slopes	551	0	551	*
129	Marblemount gravelly loamy sand, 30 to 65 percent slopes	4,144	0	4,144	0.3
130	Marblemount gravelly loamy sand, schist substratum, 30 to 65 percent slopes	598	0	598	0.1
131	Marblemount-Rock outcrop complex, 45 to 90 percent slopes	2,954	0	2,954	0.2
132	Mashel silt loam, 5 to 30 percent slopes	907	7,444	8,351	0.7
133	Mashel silt loam, 30 to 65 percent slopes	0	3,055	3,055	0.3
134	Melakwa sandy loam, 8 to 30 percent slopes	285	0	285	*
135	Melakwa sandy loam, 30 to 65 percent slopes	7,206	0	7,206	0.6
136	Melakwa sandy loam, windswept, 30 to 65 percent slopes	302	0	302	*
137	Melakwa sandy loam, tuff substratum, 30 to 65 percent slopes	297	0	297	*
138	Melakwa-Rock outcrop complex, 45 to 90 percent slopes	2,673	0	2,673	0.2
139	Mowich silt loam, 0 to 15 percent slopes	0	3,187	3,187	0.3
140	Mukilteo peat, 0 to 1 percent slopes	557	0	557	*
141	Nagrom sandy loam, 8 to 30 percent slopes	278	695	973	0.1
142	Nagrom sandy loam, 30 to 65 percent slopes	12,909	2,344	15,253	1.3
143	Nagrom gravelly loam, tuff substratum, 8 to 30 percent slopes	220	570	790	0.1
144	Nagrom gravelly loam, tuff substratum, 30 to 65 percent slopes	3,904	3,120	7,024	0.6
145	Nagrom-Rock outcrop complex, 30 to 90 percent slopes	7,131	1,665	8,796	0.7
146	Nargar fine sandy loam, 0 to 15 percent slopes	2,914	0	2,914	0.2
147	Nargar fine sandy loam, 15 to 30 percent slopes	1,704	0	1,704	0.1
148	Nargar-Pastik complex, 35 to 70 percent slopes	1,954	0	1,954	0.2
149	National cindery sandy loam, 0 to 8 percent slopes	0	5,026	5,026	0.4
150	Neilton gravelly loamy sand, 2 to 15 percent slopes	400	0	400	*
151	Nimue loamy sand, 6 to 30 percent slopes	3,297	3,005	6,302	0.5

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	King County	Pierce County	Total-- Area	Extent
		Acres	Acres	Acres	Pct
152	Nimue loamy sand, 30 to 65 percent slopes	24,909	15,747	40,656	3.4
153	Nimue loamy sand, 65 to 90 percent slopes	1,301	1,384	2,685	0.2
154	Nimue loamy sand, tuff substratum, 8 to 30 percent slopes	2,750	2,976	5,726	0.5
155	Nimue loamy sand, tuff substratum, 30 to 65 percent slopes	17,401	14,540	31,941	2.7
156	Nimue-Rock outcrop complex, 30 to 90 percent slopes	2,838	6,745	9,583	0.8
157	Nooksack silt loam, 0 to 2 percent slopes	2,709	0	2,709	0.2
158	Norma loam, 0 to 3 percent slopes	1,289	288	1,577	0.1
159	Oakes gravelly loam, 6 to 30 percent slopes	1,165	3,339	4,504	0.4
160	Oakes cobbly loam, 6 to 30 percent slopes	0	6,344	6,344	0.5
161	Oakes cobbly loam, 30 to 65 percent slopes	0	3,519	3,519	0.3
162	Ogarty gravelly loam, 8 to 30 percent slopes	2,368	540	2,908	0.2
163	Ogarty gravelly loam, 30 to 65 percent slopes	5,118	2,484	7,602	0.6
164	Ogarty-Rock outcrop complex, 45 to 90 percent slopes	1,123	559	1,682	0.1
165	Ohop sandy loam, 0 to 8 percent slopes	0	1,652	1,652	0.1
166	Ohop very gravelly loam, 0 to 15 percent slopes	0	1,484	1,484	0.1
167	Olomount gravelly loam, 8 to 30 percent slopes	472	0	472	*
168	Olomount gravelly loam, 30 to 65 percent slopes	741	0	741	0.1
169	Olomount-Rock outcrop complex, 45 to 90 percent slopes	686	0	686	0.1
170	Oridia silt loam, 0 to 2 percent slopes	1,429	0	1,429	0.1
171	Orthents, avalanche chutes-Humods complex, 30 to 100 percent slopes	3,658	863	4,521	0.4
172	Ovall gravelly loam, 15 to 30 percent slopes	323	254	577	*
173	Ovall gravelly loam, 30 to 65 percent slopes	427	2,334	2,761	0.2
174	Pastik silt loam, 0 to 30 percent slopes	1,171	0	1,171	0.1
175	Persis sandy loam, 0 to 8 percent slopes	2,104	0	2,104	0.2
176	Persis sandy loam, windswept, 0 to 8 percent slopes	237	0	237	*
177	Pheeney gravelly loam, 8 to 30 percent slopes	0	663	663	0.1
178	Pheeney gravelly loam, 30 to 65 percent slopes	169	4,601	4,770	0.4
179	Pheeney gravelly silt loam, tuff substratum, 8 to 30 percent slopes	0	187	187	*
180	Pheeney gravelly silt loam, tuff substratum, 30 to 65 percent slopes	69	1,763	1,832	0.2
181	Pheeney-Rock outcrop complex, 30 to 90 percent slopes	0	1,534	1,534	0.1
182	Philippa sandy loam, 0 to 30 percent slopes	6,950	0	6,950	0.6
183	Philippa sandy loam, 30 to 65 percent slopes	3,445	0	3,445	0.3
184	Pierking gravelly sandy loam, 0 to 3 percent slopes	24	517	541	*
185	Pierking-Borohemists complex, 0 to 5 percent slopes	0	2,084	2,084	0.2
186	Pierking-Mowich complex, 2 to 15 percent slopes	0	330	330	*
187	Pilchuck loamy fine sand, 0 to 3 percent slopes	1,298	1,573	2,871	0.2
188	Pitcher sandy loam, 8 to 30 percent slopes	4,566	2,809	7,375	0.6
189	Pitcher sandy loam, 30 to 65 percent slopes	21,803	5,944	27,747	2.3
190	Pitcher sandy loam, windswept, 30 to 65 percent slopes	469	0	469	*
191	Pitcher sandy loam, tuff substratum, 8 to 30 percent slopes	3,946	2,145	6,091	0.5
192	Pitcher sandy loam, tuff substratum, 30 to 65 percent slopes	18,945	8,130	27,075	2.3
193	Pitcher sandy loam, tuff substratum, windswept, 30 to 65 percent slopes	2,745	0	2,745	0.2
194	Pitcher-Rock outcrop complex, 30 to 90 percent slopes	483	86	569	*
195	Pits	445	33	478	*
196	Playco loamy sand, 8 to 30 percent slopes	6,237	1,928	8,165	0.7
197	Playco loamy sand, 30 to 65 percent slopes	36,922	8,572	45,494	3.8
198	Playco loamy sand, 65 to 90 percent slopes	1,301	286	1,587	0.1
199	Playco very gravelly loamy sand, tuff substratum, 8 to 30 percent slopes	3,496	1,705	5,201	0.4
200	Playco very gravelly loamy sand, tuff substratum, 30 to 65 percent slopes	27,048	12,393	39,441	3.3
201	Playco-Rock outcrop complex, 30 to 90 percent slopes	2,161	1,536	3,697	0.3
202	Puget silty clay loam, 0 to 2 percent slopes	1,137	0	1,137	0.1
203	Ragnar loam, 6 to 15 percent slopes	260	200	460	*

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	King County	Pierce County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
204	Ragnar loam, 15 to 30 percent slopes	290	59	349	*
205	Ragnar-Lynnwood complex, 2 to 15 percent slopes	648	0	648	0.1
206	Ragnar-Lynnwood complex, 30 to 45 percent slopes	175	136	311	*
207	Reggad very cobbly muck, 30 to 90 percent slopes	20,912	826	21,738	1.8
208	Reggad-Haywire complex, 45 to 90 percent slopes	2,389	351	2,740	0.2
209	Reggad-Klapatche-Rock outcrop complex, 45 to 90 percent slopes	2,082	0	2,082	0.2
210	Reggad-Serene complex, 45 to 90 percent slopes	10,517	196	10,713	0.9
211	Reichel silt loam, 6 to 30 percent slopes	489	1,894	2,383	0.2
212	Reichel silt loam, 30 to 65 percent slopes	512	1,617	2,129	0.2
213	Reichel silt loam, tuff substratum, 15 to 30 percent slopes	0	635	635	0.1
214	Reichel silt loam, tuff substratum, 30 to 65 percent slopes	0	1,002	1,002	0.1
215	Riverwash	513	369	882	0.1
216	Rober loam, 0 to 30 percent slopes	8,394	0	8,394	0.7
217	Rober loam, 30 to 65 percent slopes	834	0	834	0.1
218	Rock outcrop	10,418	4,564	14,982	1.3
219	Rock outcrop-Cattcreek complex, 65 to 90 percent slopes	0	5,206	5,206	0.4
220	Rock outcrop-Cayuse complex, 30 to 90 percent slopes	0	2,425	2,425	0.2
221	Rock outcrop-Haywire complex, 45 to 90 percent slopes	5,055	8,495	13,550	1.1
222	Rock outcrop-Rubble land-Haywire complex, 45 to 90 percent slopes	5,365	1,489	6,854	0.6
223	Rock outcrop-Rubble land-Serene complex, 45 to 90 percent slopes	16,442	757	17,199	1.4
224	Rubble land	10,475	1,461	11,936	1.0
225	Rugles silt loam, 0 to 15 percent slopes	236	4,507	4,743	0.4
226	Salal silt loam, 0 to 2 percent slopes	558	0	558	*
227	Sauk silt loam, 0 to 8 percent slopes	2,514	0	2,514	0.2
228	Scamman silt loam, 6 to 15 percent slopes	73	4,990	5,063	0.4
229	Scamman silt loam, 15 to 30 percent slopes	0	797	797	0.1
230	Scamman silt loam, 30 to 65 percent slopes	0	361	361	*
231	Seattle muck, 0 to 1 percent slopes	2,867	0	2,867	0.2
232	Serene gravelly sandy loam, 8 to 30 percent slopes	1,448	0	1,448	0.1
233	Serene gravelly sandy loam, 30 to 65 percent slopes	7,308	530	7,838	0.7
234	Serene-Rock outcrop complex, 45 to 90 percent slopes	3,139	167	3,306	0.3
235	Shalcar muck, 0 to 1 percent slopes	1,442	400	1,842	0.2
236	Si silt loam, 0 to 2 percent slopes	1,723	0	1,723	0.1
237	Skykomish gravelly sandy loam, 0 to 30 percent slopes	5,301	0	5,301	0.4
238	Skykomish gravelly sandy loam, 30 to 65 percent slopes	1,299	0	1,299	0.1
239	Skykomish gravelly sandy loam, windswept, 0 to 30 percent slopes	312	0	312	*
240	Skykomish very stony loam, 0 to 30 percent slopes	1,623	0	1,623	0.1
241	Snoqualmie loamy fine sand, 0 to 8 percent slopes	1,994	661	2,655	0.2
242	Snoqualmie loamy fine sand, windswept, 0 to 8 percent slopes	399	0	399	*
243	Spukwush loamy sand, 8 to 30 percent slopes	239	579	818	0.1
244	Stahl very gravelly silt loam, 30 to 65 percent slopes	216	1,596	1,812	0.2
245	Stahl very gravelly silt loam, tuff substratum, 15 to 30 percent slopes	0	370	370	*
246	Stahl very gravelly silt loam, tuff substratum, 30 to 65 percent slopes	0	1,452	1,452	0.1
247	Sulsavar loam, 0 to 8 percent slopes	1,653	1,037	2,690	0.2
248	Sultan silt loam, 0 to 2 percent slopes	571	12	583	*
249	Teneriffe loamy sand, 8 to 30 percent slopes	932	0	932	0.1
250	Teneriffe loamy sand, 30 to 65 percent slopes	9,499	0	9,499	0.8
251	Teneriffe loamy sand, windswept, 30 to 65 percent slopes	252	0	252	*
252	Teneriffe very gravelly sandy loam, channery substratum, 8 to 30 percent slopes	330	0	330	*

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	King County	Pierce County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
253	Teneriffe very gravelly sandy loam, channery substratum, 30 to 65 percent slopes	1,770	0	1,770	0.1
254	Tokul gravelly loam, 0 to 6 percent slopes	9,137	0	9,137	0.8
255	Tokul gravelly loam, 6 to 15 percent slopes	33,827	114	33,941	2.9
256	Tokul gravelly loam, 15 to 30 percent slopes	14,908	236	15,144	1.3
257	Tokul gravelly loam, 30 to 65 percent slopes	6,051	0	6,051	0.5
258	Tokul-Pastik complex, 45 to 90 percent slopes	6,172	0	6,172	0.5
259	Tokul-Pastik complex, windswept, 45 to 90 percent slopes	312	0	312	*
260	Treen loam, 30 to 90 percent slopes	473	0	473	*
261	Tukwila muck, 0 to 1 percent slopes	148	7	155	*
262	Tusip sandy loam, 15 to 30 percent slopes	0	1,751	1,751	0.1
263	Tusip sandy loam, 30 to 65 percent slopes	0	2,502	2,502	0.2
264	Typic Haplorthods, 35 to 100 percent slopes	1,890	2,185	4,075	0.3
265	Typic Udifluvents, 0 to 3 percent slopes	1,406	0	1,406	0.1
266	Typic Udifluvents, windswept, 0 to 3 percent slopes	420	0	420	*
267	Udifluvents, moist, 0 to 8 percent slopes	5,823	2,577	8,400	0.7
268	Vailton silt loam, 8 to 30 percent slopes	0	985	985	0.1
269	Vailton silt loam, 30 to 65 percent slopes	8	4,159	4,167	0.4
270	Voight silt loam, 6 to 15 percent slopes	0	386	386	*
271	Voight silt loam, 15 to 30 percent slopes	0	1,320	1,320	0.1
272	Voight silt loam, 30 to 65 percent slopes	0	1,010	1,010	0.1
273	Welcome loam, 0 to 30 percent slopes	886	0	886	0.1
274	Welcome loam, 30 to 65 percent slopes	332	0	332	*
275	Wilkeson gravelly silt loam, 6 to 15 percent slopes	123	607	730	0.1
276	Wilkeson gravelly silt loam, 15 to 30 percent slopes	342	3,335	3,677	0.3
277	Wilkeson gravelly silt loam, 30 to 45 percent slopes	0	3,485	3,485	0.3
278	Winston loam, 0 to 8 percent slopes	2,381	1,667	4,048	0.3
279	Winston loam, 8 to 30 percent slopes	1,659	1,139	2,798	0.2
280	Winston loam, windswept, 0 to 30 percent slopes	484	0	484	*
281	Woodinville silt loam, 0 to 2 percent slopes	210	0	210	*
282	Zynbar loam, 6 to 30 percent slopes	228	16,153	16,381	1.4
283	Zynbar loam, 30 to 65 percent slopes	159	5,680	5,839	0.5
284	Zynbar silt loam, till substratum, 0 to 15 percent slopes	0	3,681	3,681	0.3
	Water	5,237	2,580	7,817	0.7
	Total	791,002	396,128	1,187,130	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
20	Belfast silt loam, 0 to 2 percent slopes
53	Edgewick silt loam, 0 to 3 percent slopes
106	Klaber silt loam, 0 to 8 percent slopes (where drained)
107	Klaber-Cinebar silt loams, 0 to 8 percent slopes (where drained)
119	Lemolo silt loam, 0 to 8 percent slopes (where drained)
140	Mukilteo peat, 0 to 1 percent slopes (where drained)
157	Nooksack silt loam, 0 to 2 percent slopes
158	Norma loam, 0 to 3 percent slopes (where drained)
170	Oridia silt loam, 0 to 2 percent slopes (where drained)
175	Persis sandy loam, 0 to 8 percent slopes
202	Puget silty clay loam, 0 to 2 percent slopes (where drained)
226	Salal silt loam, 0 to 2 percent slopes
227	Sauk silt loam, 0 to 8 percent slopes
231	Seattle muck, 0 to 1 percent slopes (where drained)
235	Shalcar muck, 0 to 1 percent slopes (where drained)
236	Si silt loam, 0 to 2 percent slopes
247	Sulsavar loam, 0 to 8 percent slopes
248	Sultan silt loam, 0 to 2 percent slopes
254	Tokul gravelly loam, 0 to 6 percent slopes
261	Tukwila muck, 0 to 1 percent slopes (where drained)
278	Winston loam, 0 to 8 percent slopes
281	Woodinville silt loam, 0 to 2 percent slopes (where drained)

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	11,951	8,592	3,359	---	---
III	144,370	135,319	9,051	---	---
IV	173,497	147,233	14,060	12,204	---
V	4,288	---	4,288	---	---
VI	119,610	83,174	28,033	8,403	---
VII	614,044	562,065	1,822	50,157	---
VIII	111,614	---	882	110,732	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
1, 2---------- Alderwood	11D	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir--------- Red alder---------- Western redcedar---- Western hemlock----- Pacific madrone-----	111 --- --- --- ---	11 --- --- --- ---	Douglas fir, red alder.
3---------- Alkiridge	14F	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir--------- Western redcedar----	95 --- --- --- ---	14 --- --- --- ---	Western hemlock, noble fir.
4---------- Altapeak	7F	Slight	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar-------- Mountain hemlock----	65 --- --- --- ---	7 --- --- --- ---	Noble fir, western hemlock.
5, 6---------- Altapeak	7R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar-------- Mountain hemlock----	65 --- --- --- ---	7 --- --- --- ---	Noble fir, western hemlock.
7**: Altapeak----------	7R	Severe	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar-------- Mountain hemlock----	65 --- --- --- ---	7 --- --- --- ---	Noble fir, western hemlock.
Rock outcrop.										
8---------- Andic Cryumbrepts	6R	Severe	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Subalpine fir------- Mountain hemlock----	55 --- --- ---	6 --- --- ---	Western hemlock, mountain hemlock, Pacific silver fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
10, 11--Barneston	11F	Slight	Slight	Moderate	Slight	Moderate	Douglas fir	118	11	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
12--Barneston	11R	Moderate	Severe	Moderate	Slight	Moderate	Douglas fir	110	11	Douglas fir.
							Western hemlock	90	9	
							Western redcedar	---	---	
13, 14--Barneston	11F	Slight	Slight	Moderate	Slight	Moderate	Douglas fir	118	11	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
15--Barneston	11R	Moderate	Severe	Moderate	Slight	Moderate	Douglas fir	118	11	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
16--Barneston	9F	Slight	Slight	Moderate	Slight	Moderate	Douglas fir	100	9	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
17--Beausite	11F	Slight	Slight	Severe	Moderate	Moderate	Douglas fir	118	11	Douglas fir, western hemlock.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
18--Beausite	11R	Moderate	Severe	Severe	Moderate	Moderate	Douglas fir	118	11	Douglas fir, western hemlock.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
19--Beausite	11R	Severe	Severe	Severe	Moderate	Moderate	Douglas fir	111	11	Douglas fir, western hemlock.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
20---------- Belfast	12W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir	120	12	Douglas fir, red alder.
							Black cottonwood	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
21---------- Bellicum	18F	Moderate	Moderate	Moderate	Moderate	Moderate	Douglas fir	112	10	Douglas fir, western hemlock, Pacific silver fir.
							Western hemlock	112	18	
							Red alder	---	---	
							Pacific silver fir	---	---	
							Western redcedar	---	---	
22---------- Bellicum	18R	Severe	Severe	Moderate	Moderate	Moderate	Douglas fir	112	10	Douglas fir, western hemlock, Pacific silver fir.
							Western hemlock	112	18	
							Red alder	---	---	
							Pacific silver fir	---	---	
							Western redcedar	---	---	
23---------- Blethen	11F	Slight	Slight	Moderate	Slight	Moderate	Douglas fir	115	11	Douglas fir, red alder.
							Western hemlock	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
24---------- Blethen	11R	Moderate	Severe	Moderate	Slight	Moderate	Douglas fir	115	11	Douglas fir, red alder.
							Western hemlock	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
26---------- Bromo	17R	Severe	Severe	Moderate	Moderate	Moderate	Douglas fir	118	11	Douglas fir, western hemlock.
							Western hemlock	106	17	
							Red alder	---	---	
							Western redcedar	---	---	
							Pacific silver fir	---	---	
							Bigleaf maple	---	---	
27, 28, 29, 30----- Cattcreek	13R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock	86	13	Douglas fir, noble fir, western hemlock.
							Douglas fir	90	8	
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Western redcedar	---	---	
							Western white pine	---	---	
							Alaska cedar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
31--Cattcreek	13F	Moderate	Moderate	Moderate	Moderate	Slight	Western hemlock Douglas fir Pacific silver fir Noble fir Western redcedar Western white pine Alaska cedar	86 90 --- --- --- --- ---	13 8 --- --- --- --- ---	Douglas fir, noble fir, western hemlock.
32--Cayuse	6N	Slight	Severe	Moderate	Slight	Slight	Western hemlock Pacific silver fir Subalpine fir Engelmann spruce	55 --- --- ---	6 --- --- ---	Noble fir, western hemlock.
33--Cayuse	6R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock Pacific silver fir Subalpine fir Engelmann spruce	55 --- --- ---	6 --- --- ---	Noble fir, western hemlock.
34, 35--Chinkmin	7D	Slight	Severe	Moderate	Moderate	Slight	Western hemlock Pacific silver fir Noble fir Alaska cedar Mountain hemlock	65 --- --- --- ---	7 --- --- --- ---	Noble fir, western hemlock.
36--Chinkmin	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock Pacific silver fir Noble fir Alaska cedar Mountain hemlock	65 --- --- --- ---	7 --- --- --- ---	Western hemlock.
37, 38--Chinkmin	6D	Slight	Severe	Moderate	Moderate	Slight	Western hemlock Pacific silver fir Noble fir Alaska cedar Mountain hemlock	60 --- --- --- ---	6 --- --- --- ---	Noble fir.
39--Christoff	10A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	106 --- --- ---	10 --- --- ---	Douglas fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
40--Christoff	10R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	106 --- --- ---	10 --- --- ---	Douglas fir.
41, 42--Chuckanut	13A	Slight	Moderate	Slight	Slight	Severe	Douglas fir Western hemlock Red alder Western redcedar	130 --- --- ---	13 --- --- ---	Douglas fir, red alder.
43--Chuckanut	13R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Red alder Western redcedar	130 --- --- ---	13 --- --- ---	Douglas fir, red alder.
44, 45--Cinebar	17A	Slight	Moderate	Slight	Slight	Severe	Douglas fir Red alder Western hemlock Bigleaf maple Western redcedar	132 --- 110 --- ---	13 --- 17 --- ---	Douglas fir.
46--Cinebar	17R	Moderate	Severe	Slight	Slight	Severe	Douglas fir Red alder Western hemlock Bigleaf maple Western redcedar	132 --- 110 --- ---	13 --- 17 --- ---	Douglas fir.
47--Cotteral	13F	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock Douglas fir Pacific silver fir Western redcedar Noble fir Alaska cedar Western white pine	85 90 --- --- --- --- ---	13 8 --- --- --- --- ---	Douglas fir, noble fir, western hemlock, Pacific silver fir.
48--Cotteral	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock Pacific silver fir Western redcedar Noble fir	65 --- --- ---	7 --- --- ---	Noble fir, western hemlock, Pacific silver fir.
49--Crinker	12R	Moderate	Severe	Moderate	Moderate	Moderate	Western hemlock Pacific silver fir	83 ---	12 ---	Western hemlock, noble fir, Pacific silver fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
50---------- Cryofluvents	11W	Slight	Moderate	Moderate	Slight	Slight	Western hemlock-----	80	11	Western hemlock, noble fir.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Western redcedar----	---	---	
							Douglas fir---------	---	---	
							Alaska cedar--------	---	---	
52---------- Dobbs	15D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir---------	110	10	Douglas fir, western hemlock, Pacific silver fir.
							Western hemlock-----	100	15	
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
53---------- Edgewick	12W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir---------	125	12	Douglas fir, red alder.
							Red alder----------	---	---	
							Western redcedar----	---	---	
54---------- Elwell	17D	Slight	Moderate	Slight	Moderate	Moderate	Western hemlock-----	105	17	Western hemlock, Douglas fir, red alder.
							Douglas fir---------	124	12	
							Western redcedar----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
55---------- Elwell	17R	Moderate	Severe	Slight	Moderate	Moderate	Western hemlock-----	105	17	Western hemlock, Douglas fir, red alder.
							Douglas fir---------	124	12	
							Western redcedar----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
56, 57, 58, 59----- Ethania	8R	Moderate	Severe	Severe	Slight	Slight	Western hemlock-----	70	8	Western hemlock, noble fir, Pacific silver fir.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Alaska cedar--------	---	---	
60---------- Ethania	8F	Slight	Moderate	Severe	Slight	Slight	Western hemlock-----	70	8	Noble fir, western hemlock, Pacific silver fir.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Alaska cedar--------	---	---	
61---------- Foss	8X	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	70	8	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Douglas fir---------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
62---------- Foss	8R	Moderate	Severe	Moderate	Slight	Moderate	Western hemlock-----	70	8	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Douglas fir--------	---	---	
63---------- Gallup	10N	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	75	10	Western hemlock, noble fir.
							Pacific silver fir--	---	---	
							Douglas fir--------	---	---	
64, 65---------- Gallup	10R	Moderate	Severe	Moderate	Slight	Moderate	Western hemlock-----	75	10	Western hemlock, noble fir.
							Pacific silver fir--	---	---	
							Douglas fir--------	---	---	
66, 67---------- Getchell	14D	Slight	Moderate	Slight	Moderate	Moderate	Western hemlock-----	91	14	Western hemlock, Pacific silver fir.
							Pacific silver fir--	---	---	
							Douglas fir--------	---	---	
							Western redcedar----	---	---	
68---------- Getchell	14R	Moderate	Severe	Slight	Moderate	Moderate	Western hemlock-----	91	14	Western hemlock, Pacific silver fir.
							Pacific silver fir--	---	---	
							Douglas fir--------	---	---	
							Western redcedar----	---	---	
69---------- Greenwater	18S	Slight	Slight	Severe	Slight	Moderate	Douglas fir--------	117	11	Douglas fir, red alder.
							Western hemlock-----	114	18	
							Red alder----------	---	---	
							Western redcedar----	---	---	
							Bigleaf maple-------	---	---	
70---------- Grotto	8S	Slight	Moderate	Moderate	Slight	Moderate	Douglas fir--------	90	8	Douglas fir, western hemlock.
							Western hemlock-----	---	---	
							Red alder----------	---	---	
							Western redcedar----	---	---	
71---------- Hartnit	10D	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock-----	75	10	Western hemlock, Pacific silver fir.
							Pacific silver fir--	---	---	
							Western redcedar----	---	---	
							Douglas fir--------	---	---	
72---------- Haywire	7D	Slight	Moderate	Moderate	Moderate	Moderate	Western hemlock-----	59	7	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
73---------- Haywire	7R	Moderate	Severe	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir----------	59 --- ---	7 --- ---	Noble fir, western hemlock.
74---------- Haywire	7D	Slight	Moderate	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir----------	59 --- ---	7 --- ---	Noble fir, western hemlock.
75---------- Haywire	7R	Moderate	Severe	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir----------	59 --- ---	7 --- ---	Noble fir, western hemlock.
76---------- Hinker	7D	Slight	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Alaska cedar-------- Mountain hemlock----	65 --- --- ---	7 --- --- ---	Western hemlock, Pacific silver fir.
77, 78---------- Hinker	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Alaska cedar-------- Mountain hemlock----	65 --- --- ---	7 --- --- ---	Western hemlock, Pacific silver fir.
79---------- Humaquepts	6W	Slight	Severe	Severe	Severe	Severe	Red alder---------- Western redcedar---- Sitka spruce-------- Black cottonwood---- Western hemlock-----	85 --- --- --- ---	6 --- --- --- ---	Western redcedar, Sitka spruce, red alder.
80---------- Index	11F	Slight	Moderate	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir--------- Alaska cedar--------	81 --- --- --- ---	11 --- --- --- ---	Western hemlock, noble fir.
81, 82---------- Index	11R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir--------- Alaska cedar--------	81 --- --- --- ---	11 --- --- --- ---	Western hemlock, noble fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
83**:										
Index	11R	Severe	Severe	Moderate	Slight	Slight	Western hemlock	81	11	Western hemlock, noble fir.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Douglas fir	---	---	
							Alaska cedar	---	---	
Rock outcrop.										
84 Jonas	18A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	121	12	Douglas fir, western hemlock.
							Western hemlock	110	18	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
85 Jonas	18R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	121	12	Douglas fir, western hemlock.
							Western hemlock	110	18	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
86 Jonas	18A	Slight	Moderate	Slight	Slight	Severe	Douglas fir	121	12	Douglas fir, western hemlock, red alder.
							Western hemlock	110	18	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
87, 88 Jonas	18R	Moderate	Severe	Slight	Slight	Severe	Douglas fir	121	12	Douglas fir, western hemlock.
							Western hemlock	110	18	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
89 Kaleetan	11A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	113	11	Douglas fir, western hemlock.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
90 Kaleetan	11R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	113	11	Douglas fir, western hemlock.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
91--Kaleetan	8R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	90 --- --- ---	8 --- --- ---	Douglas fir, western hemlock.
92--Kaleetan	13A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	109 105 --- ---	10 13 --- ---	Douglas fir, western hemlock.
93--Kaleetan	13R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	109 105 --- ---	10 13 --- ---	Douglas fir, western hemlock.
94--Kaleetan	11A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	113 --- --- ---	11 --- --- ---	Douglas fir, western hemlock.
95--Kaleetan	11R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Western redcedar Red alder	113 --- --- ---	11 --- --- ---	Douglas fir, western hemlock.
96--Kanaskat	10A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	113 --- --- --- ---	10 --- --- --- ---	Douglas fir.
97--Kanaskat	10R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	113 --- --- --- ---	10 --- --- --- ---	Douglas fir.
98--Kanaskat	10A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	113 --- --- --- ---	10 --- --- --- ---	Douglas fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
99---------- Kanaskat	10R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir---------- Western hemlock----- Red alder---------- Bigleaf maple------- Western redcedar----	113 --- --- --- ---	10 --- --- --- ---	Douglas fir.
100, 101---------- Kapowsin	12D	Slight	Moderate	Slight	Moderate	Severe	Douglas fir---------- Red alder---------- Western redcedar---- Western hemlock----- Bigleaf maple-------	123 --- --- --- ---	12 --- --- --- ---	Douglas fir, red alder.
102---------- Kapowsin	12R	Moderate	Severe	Slight	Moderate	Severe	Douglas fir---------- Red alder---------- Western redcedar---- Western hemlock----- Bigleaf maple-------	123 --- --- --- ---	12 --- --- --- ---	Douglas fir, red alder.
103, 104---------- Kindy	15D	Slight	Moderate	Slight	Moderate	Moderate	Western hemlock----- Douglas fir---------- Pacific silver fir-- Western redcedar----	96 95 --- ---	15 8 --- ---	Western hemlock, Pacific silver fir.
105---------- Kindy	15R	Moderate	Severe	Slight	Moderate	Moderate	Western hemlock----- Douglas fir---------- Pacific silver fir-- Western redcedar----	96 95 --- ---	15 8 --- ---	Western hemlock, Pacific silver fir.
106---------- Klaber	7W	Slight	Severe	Severe	Severe	Severe	Red alder---------- Douglas fir---------- Western redcedar---- Bigleaf maple------- Oregon ash----------	90 --- --- --- ---	7 --- --- --- ---	Red alder, western redcedar.
107**: Klaber----------	7W	Slight	Severe	Severe	Severe	Severe	Red alder---------- Douglas fir---------- Western redcedar---- Bigleaf maple------- Oregon ash----------	90 --- --- --- ---	7 --- --- --- ---	Red alder, western redcedar.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
107**:										
Cinebar	17A	Slight	Moderate	Slight	Slight	Severe	Douglas fir	132	13	Douglas fir.
							Red alder	---	---	
							Western hemlock	110	17	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
108 Klapatche	10F	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock	72	10	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Douglas fir	---	---	
							Alaska cedar	---	---	
109 Klapatche	10R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock	72	10	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Douglas fir	---	---	
							Alaska cedar	---	---	
110**:										
Klapatche	10R	Severe	Severe	Moderate	Moderate	Slight	Western hemlock	72	10	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Douglas fir	---	---	
							Alaska cedar	---	---	
Rock outcrop.										
111, 112 Klaus	10D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir	111	10	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
113 Klaus	10R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir	111	10	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
114 Klaus	8D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir	92	8	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
115 Klaus	8R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir	92	8	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
116--Larrupin	8S	Slight	Moderate	Moderate	Slight	Slight	Douglas fir Western hemlock Western redcedar Red alder	95 --- --- ---	8 --- --- ---	Douglas fir.
117--Larrupin	8R	Moderate	Severe	Moderate	Slight	Slight	Douglas fir Western hemlock Western redcedar Red alder	95 --- --- ---	8 --- --- ---	Douglas fir.
118--Larrupin	17A	Slight	Moderate	Slight	Slight	Moderate	Western hemlock Douglas fir Pacific silver fir Red alder Western redcedar	105 --- --- --- ---	17 --- --- --- ---	Western hemlock, Douglas fir.
119--Lemolo	18W	Slight	Severe	Severe	Severe	Severe	Western hemlock Red alder Douglas fir Sitka spruce Western redcedar	113 90 --- --- ---	18 7 --- --- ---	Western hemlock, red alder.
120--Littlejohn	10F	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir Western hemlock Noble fir Pacific silver fir	110 --- --- ---	10 --- --- ---	Douglas fir, western hemlock.
121--Littlejohn	10R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir Western hemlock Noble fir Pacific silver fir	110 --- --- ---	10 --- --- ---	Douglas fir, western hemlock.
122--Littlejohn	8R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir Western hemlock Noble fir Pacific silver fir	90 --- --- ---	8 --- --- ---	Douglas fir, western hemlock.
123--Littlejohn	10F	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir Western hemlock Noble fir Pacific silver fir	110 --- --- ---	10 --- --- ---	Douglas fir, western hemlock.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
124---------- Littlejohn	10R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir--------- Western hemlock----- Noble fir---------- Pacific silver fir--	110 --- --- ---	10 --- --- ---	Douglas fir, western hemlock.
125---------- Littlejohn	8R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir--------- Western hemlock----- Noble fir---------- Pacific silver fir--	90 --- --- ---	8 --- --- ---	Douglas fir, western hemlock.
126**: Littlejohn-------- Rock outcrop.	10R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir--------- Western hemlock----- Noble fir---------- Pacific silver fir--	110 --- --- ---	10 --- --- ---	Douglas fir, western hemlock.
127---------- Lynnwood	11S	Slight	Slight	Moderate	Slight	Moderate	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	121 --- --- --- ---	11 --- --- --- ---	Douglas fir, red alder.
128---------- Marblemount	12F	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock----- Douglas fir--------- Pacific silver fir-- Western redcedar----	85 107 --- ---	12 9 --- ---	Western hemlock, Douglas fir, Pacific silver fir.
129, 130---------- Marblemount	12R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock----- Douglas fir--------- Pacific silver fir-- Western redcedar----	85 107 --- ---	12 9 --- ---	Western hemlock, Douglas fir, Pacific silver fir.
131**: Marblemount------- Rock outcrop.	12R	Severe	Severe	Moderate	Moderate	Slight	Western hemlock----- Douglas fir--------- Pacific silver fir-- Western redcedar----	85 107 --- ---	12 9 --- ---	Western hemlock, Douglas fir, Pacific silver fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
132---------- Mashel	12A	Slight	Moderate	Slight	Slight	Severe	Douglas fir---------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	123 --- --- --- ---	12 --- --- --- ---	Douglas fir, red alder.
133---------- Mashel	12R	Moderate	Severe	Slight	Slight	Severe	Douglas fir---------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	123 --- --- --- ---	12 --- --- --- ---	Douglas fir, red alder.
134---------- Melakwa	9D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	104 --- --- ---	9 --- --- ---	Douglas fir, western hemlock.
135---------- Melakwa	9R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	104 --- --- ---	9 --- --- ---	Douglas fir, western hemlock.
136---------- Melakwa	8R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	90 --- --- ---	8 --- --- ---	Douglas fir, western hemlock.
137---------- Melakwa	9R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	104 --- --- ---	9 --- --- ---	Douglas fir, western hemlock.
138**: Melakwa---------- Rock outcrop.	9R	Severe	Severe	Slight	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	104 --- --- ---	9 --- --- ---	Douglas fir, western hemlock.
139---------- Mowich	12W	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir---------- Western hemlock----- Western redcedar---- Red alder----------	121 --- --- ---	12 --- --- ---	Douglas fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
141---------- Nagrom	11D	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir----------	77 --- ---	11 --- ---	Western hemlock, noble fir.
142---------- Nagrom	11R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir----------	77 --- ---	11 --- ---	Western hemlock, noble fir.
143---------- Nagrom	13D	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir----------	90 --- ---	13 --- ---	Western hemlock, noble fir.
144---------- Nagrom	13R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir----------	90 --- ---	13 --- ---	Western hemlock, noble fir.
145**: Nagrom----------	11R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock----- Pacific silver fir-- Noble fir----------	77 --- ---	11 --- ---	Western hemlock, noble fir.
Rock outcrop.										
146, 147---------- Nargar	13A	Slight	Moderate	Slight	Slight	Severe	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar----	134 --- --- ---	13 --- --- ---	Western hemlock, Douglas fir, red alder.
148**: Nargar----------	13R	Moderate	Severe	Slight	Slight	Severe	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar----	134 --- --- ---	13 --- --- ---	Western hemlock, Douglas fir, red alder.
Pastik----------	20R	Moderate	Severe	Slight	Moderate	Severe	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	132 --- 123 --- ---	13 --- 20 --- ---	Douglas fir, red alder.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
149---------- National	12F	Slight	Slight	Moderate	Moderate	Moderate	Douglas fir--------- Western hemlock----- Western redcedar---- Red alder---------- Black cottonwood----	127 --- --- --- ---	12 --- --- --- ---	Douglas fir, red alder.
150---------- Neilton	10F	Slight	Slight	Severe	Slight	Moderate	Douglas fir--------- Grand fir---------- Western hemlock----- Western redcedar----	105 --- --- ---	10 --- --- ---	Douglas fir.
151---------- Nimue	10F	Slight	Moderate	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar--------	71 --- --- ---	10 --- --- ---	Western hemlock, noble fir.
152, 153---------- Nimue	10R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar--------	71 --- --- ---	10 --- --- ---	Western hemlock, noble fir.
154---------- Nimue	10F	Slight	Moderate	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar--------	71 --- --- ---	10 --- --- ---	Western hemlock, noble fir.
155---------- Nimue	10R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar--------	71 --- --- ---	10 --- --- ---	Western hemlock, noble fir.
156**: Nimue----------	10R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Alaska cedar--------	71 --- --- ---	10 --- --- ---	Western hemlock, noble fir.
Rock outcrop.										
157---------- Nooksack	12W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir--------- Western redcedar---- Red alder----------	120 --- ---	12 --- ---	Douglas fir, red alder.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
158---------- Norma	7W	Slight	Severe	Severe	Severe	Severe	Red alder----------	90	7	Red alder, western redcedar.
							Western redcedar----	---	---	
							Bigleaf maple-------	---	---	
							Western hemlock-----	---	---	
159, 160---------- Oakes	16F	Slight	Moderate	Slight	Slight	Moderate	Douglas fir---------	117	11	Douglas fir, western hemlock, red alder.
							Western hemlock-----	105	16	
							Western redcedar----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
161---------- Oakes	16R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir---------	117	11	Douglas fir, western hemlock, red alder.
							Western hemlock-----	105	16	
							Western redcedar----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
162---------- Ogarty	19F	Slight	Slight	Moderate	Moderate	Moderate	Douglas fir---------	117	11	Douglas fir, western hemlock, red alder.
							Western hemlock-----	113	19	
							Red alder----------	---	---	
							Western redcedar----	---	---	
							Bigleaf maple-------	---	---	
163---------- Ogarty	19R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir---------	117	11	Douglas fir, western hemlock, red alder.
							Western hemlock-----	113	19	
							Red alder----------	---	---	
							Western redcedar----	---	---	
							Bigleaf maple-------	---	---	
164**: Ogarty----------	19R	Severe	Severe	Moderate	Moderate	Moderate	Douglas fir---------	117	11	Douglas fir, western hemlock, red alder.
							Western hemlock-----	113	19	
							Red alder----------	---	---	
							Western redcedar----	---	---	
							Bigleaf maple-------	---	---	
Rock outcrop.										
165---------- Ohop	17W	Slight	Moderate	Severe	Severe	Moderate	Western hemlock-----	110	17	Douglas fir, western hemlock, black cottonwood.
							Douglas fir---------	---	---	
							Western redcedar----	---	---	
							Red alder----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
166---------- Ohop	16F	Slight	Moderate	Moderate	Moderate	Slight	Douglas fir--------- Western hemlock----- Red alder----------	127 108 ---	12 16 ---	Douglas fir, western hemlock.
167---------- Olomount	18D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar---- Pacific silver fir-- Bigleaf maple-------	122 113 --- --- --- ---	11 18 --- --- --- ---	Douglas fir, western hemlock.
168---------- Olomount	18R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar---- Pacific silver fir-- Bigleaf maple-------	122 113 --- --- --- ---	11 18 --- --- --- ---	Douglas fir, western hemlock.
169**: Olomount---------- Rock outcrop.	18R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar---- Pacific silver fir-- Bigleaf maple-------	122 113 --- --- --- ---	11 18 --- --- --- ---	Douglas fir, western hemlock.
170---------- Oridia	7W	Slight	Severe	Severe	Severe	Severe	Red alder---------- Western redcedar---- Black cottonwood----	90 --- ---	7 --- ---	Red alder, western redcedar.
172---------- Ovall	9F	Slight	Slight	Severe	Moderate	Moderate	Douglas fir--------- Red alder---------- Bigleaf maple------- Western hemlock-----	100 --- --- ---	9 --- --- ---	Douglas fir, red alder.
173---------- Ovall	9R	Moderate	Severe	Severe	Moderate	Moderate	Douglas fir--------- Red alder---------- Bigleaf maple------- Western hemlock-----	100 --- --- ---	9 --- --- ---	Douglas fir, red alder.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
174---- Pastik	20W	Slight	Moderate	Slight	Moderate	Severe	Douglas fir Western hemlock Western redcedar Bigleaf maple Red alder	132 123 --- --- ---	13 20 --- --- ---	Douglas fir, red alder.
175---- Persis	18A	Slight	Moderate	Slight	Slight	Severe	Western hemlock Douglas fir Western redcedar Red alder	130 --- --- ---	18 --- --- ---	Douglas fir, western hemlock.
176---- Persis	15A	Slight	Moderate	Slight	Slight	Severe	Western hemlock Douglas fir Western redcedar Red alder	100 --- --- ---	15 --- --- ---	Douglas fir, western hemlock.
177---- Pheeney	13F	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	101 85 --- --- ---	10 13 --- --- ---	Douglas fir, western hemlock.
178---- Pheeney	13R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	101 85 --- --- ---	10 13 --- --- ---	Douglas fir, western hemlock.
179---- Pheeney	13F	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	101 85 --- --- ---	10 13 --- --- ---	Douglas fir, western hemlock.
180---- Pheeney	13R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir Western hemlock Red alder Bigleaf maple Western redcedar	101 85 --- --- ---	10 13 --- --- ---	Douglas fir, western hemlock.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
181**:										
Pheeney	13R	Moderate	Severe	Moderate	Moderate	Moderate	Douglas fir	101	10	Douglas fir, western hemlock.
							Western hemlock	85	13	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
Rock outcrop.										
182 Philippa	10D	Slight	Moderate	Slight	Moderate	Moderate	Douglas fir	110	10	Douglas fir.
							Western hemlock	---	---	
							Red alder	---	---	
							Western redcedar	---	---	
183 Philippa	10R	Moderate	Severe	Slight	Moderate	Moderate	Douglas fir	110	10	Douglas fir.
							Western hemlock	---	---	
							Red alder	---	---	
							Western redcedar	---	---	
184 Pierking	15W	Slight	Moderate	Severe	Severe	Severe	Western hemlock	102	15	Western hemlock, western redcedar, red alder.
							Red alder	100	8	
							Western redcedar	---	---	
							Douglas fir	---	---	
							Black cottonwood	---	---	
							Grand fir	---	---	
							Sitka spruce	---	---	
185**:										
Pierking	15W	Slight	Moderate	Severe	Severe	Severe	Western hemlock	102	15	Western hemlock, western redcedar, red alder.
							Red alder	100	8	
							Western redcedar	---	---	
							Douglas fir	---	---	
							Black cottonwood	---	---	
							Grand fir	---	---	
							Sitka spruce	---	---	
Borohemists.										
Pierking	15W	Slight	Moderate	Severe	Severe	Severe	Western hemlock	102	15	Western hemlock, western redcedar, red alder.
							Red alder	100	8	
							Western redcedar	---	---	
							Douglas fir	---	---	
							Black cottonwood	---	---	
							Grand fir	---	---	
							Sitka spruce	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
186**:										
Mowich	12W	Slight	Moderate	Moderate	Moderate	Moderate	Douglas fir	121	12	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
187	11W	Slight	Moderate	Moderate	Slight	Moderate	Douglas fir	114	11	Douglas fir, red
Pilchuck							Red alder	---	---	alder.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
							Black cottonwood	---	---	
188	11A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	112	11	Douglas fir, western
Pitcher							Western hemlock	---	---	hemlock.
							Noble fir	---	---	
							Pacific silver fir	---	---	
							Red alder	---	---	
189	11R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	112	11	Douglas fir, western
Pitcher							Western hemlock	---	---	hemlock.
							Noble fir	---	---	
							Pacific silver fir	---	---	
							Red alder	---	---	
190	9R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	100	9	Douglas fir, western
Pitcher							Western hemlock	---	---	hemlock.
							Noble fir	---	---	
							Pacific silver fir	---	---	
							Red alder	---	---	
191	11A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	112	11	Douglas fir, western
Pitcher							Western hemlock	---	---	hemlock.
							Noble fir	---	---	
							Pacific silver fir	---	---	
							Red alder	---	---	
192	11R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	112	11	Douglas fir, western
Pitcher							Western hemlock	---	---	hemlock.
							Noble fir	---	---	
							Pacific silver fir	---	---	
							Red alder	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
193---------- Pitcher	9R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir--------- Western hemlock----- Noble fir---------- Pacific silver fir-- Red alder----------	100 --- --- --- ---	9 --- --- --- ---	Douglas fir, western hemlock.
194**: Pitcher---------- Rock outcrop.	11R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir--------- Western hemlock----- Noble fir---------- Pacific silver fir-- Red alder----------	112 --- --- --- ---	11 --- --- --- ---	Douglas fir, western hemlock.
196---------- Playco	14F	Slight	Moderate	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir---------	89 --- --- ---	14 --- --- ---	Western hemlock, noble fir.
197, 198---------- Playco	14R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir---------	89 --- --- ---	14 --- --- ---	Western hemlock, noble fir.
199---------- Playco	12F	Slight	Moderate	Severe	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir---------	79 --- --- ---	12 --- --- ---	Western hemlock, noble fir.
200---------- Playco	12R	Moderate	Severe	Severe	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir---------	79 --- --- ---	12 --- --- ---	Western hemlock, noble fir.
201**: Playco---------- Rock outcrop.	14R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Noble fir---------- Douglas fir---------	89 --- --- ---	14 --- --- ---	Western hemlock, noble fir.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
202---------- Puget	7W	Slight	Severe	Severe	Severe	Severe	Red alder---------- Black cottonwood---- Western redcedar----	90 --- ---	7 --- ---	Western redcedar, red alder.
203, 204---------- Ragnar	13S	Slight	Moderate	Moderate	Slight	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar----	126 --- --- ---	13 --- --- ---	Douglas fir, red alder.
205**: Ragnar----------	13S	Slight	Moderate	Moderate	Slight	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar----	126 --- --- ---	13 --- --- ---	Douglas fir, red alder.
Lynnwood----------	11S	Slight	Slight	Moderate	Slight	Moderate	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	121 --- --- --- ---	11 --- --- --- ---	Douglas fir, red alder.
206**: Ragnar----------	13R	Moderate	Severe	Moderate	Slight	Moderate	Douglas fir--------- Western hemlock----- Red alder---------- Western redcedar----	126 --- --- ---	13 --- --- ---	Douglas fir, red alder.
Lynnwood----------	11R	Moderate	Severe	Moderate	Slight	Moderate	Douglas fir--------- Red alder---------- Western hemlock----- Western redcedar---- Bigleaf maple-------	121 --- --- --- ---	11 --- --- --- ---	Douglas fir, red alder.
208**: Reggad.										
Haywire----------	7R	Severe	Severe	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir----------	59 --- ---	7 --- ---	Noble fir, western hemlock.
209**: Reggad.										

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
209**:										
Klapatche	10R	Severe	Severe	Moderate	Moderate	Slight	Western hemlock	72	10	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Douglas fir	---	---	
							Alaska cedar	---	---	
Rock outcrop.										
210**:										
Reggad.										
Serene	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock	65	7	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Mountain hemlock	---	---	
211	15A	Slight	Moderate	Slight	Slight	Moderate	Western hemlock	98	15	Western hemlock, noble fir, Pacific silver fir.
Reichel							Douglas fir	100	9	
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Western redcedar	---	---	
							Alaska cedar	---	---	
212	15R	Moderate	Severe	Slight	Slight	Moderate	Western hemlock	98	15	Western hemlock, noble fir, Pacific silver fir.
Reichel							Douglas fir	100	9	
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Western redcedar	---	---	
							Alaska cedar	---	---	
213	15A	Slight	Moderate	Slight	Slight	Moderate	Western hemlock	98	15	Western hemlock, noble fir, Pacific silver fir.
Reichel							Douglas fir	100	9	
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Western redcedar	---	---	
							Alaska cedar	---	---	
214	15R	Moderate	Severe	Slight	Slight	Moderate	Western hemlock	98	15	Western hemlock, noble fir, Pacific silver fir.
Reichel							Douglas fir	100	9	
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Western redcedar	---	---	
							Alaska cedar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
216---------- Rober	17W	Slight	Moderate	Slight	Moderate	Severe	Douglas fir--------- Western hemlock----- Western redcedar---- Red alder-----------	121 108 --- ---	11 17 --- ---	Douglas fir, western hemlock.
217---------- Rober	17R	Moderate	Severe	Slight	Moderate	Severe	Douglas fir--------- Western hemlock----- Western redcedar---- Red alder-----------	121 108 --- ---	11 17 --- ---	Douglas fir, western hemlock.
219**: Rock outcrop.										
Cattcreek----------	13R	Severe	Severe	Moderate	Moderate	Slight	Western hemlock----- Douglas fir--------- Pacific silver fir-- Noble fir---------- Western redcedar---- Western white pine-- Alaska cedar--------	86 90 --- --- --- --- ---	13 8 --- --- --- --- ---	Douglas fir, noble fir, western hemlock.
220**: Rock outcrop.										
Cayuse----------	6R	Severe	Severe	Moderate	Slight	Slight	Western hemlock----- Pacific silver fir-- Subalpine fir------- Engelmann spruce----	55 --- --- ---	6 --- --- ---	Noble fir, western hemlock.
221**: Rock outcrop.										
Haywire----------	7R	Severe	Severe	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir-----------	59 --- ---	7 --- ---	Noble fir, western hemlock.
222**: Rock outcrop. Rubble land.										
Haywire----------	7R	Severe	Severe	Moderate	Moderate	Moderate	Western hemlock----- Pacific silver fir-- Noble fir-----------	59 --- ---	7 --- ---	Noble fir, western hemlock.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
223**:										
Rock outcrop.										
Rubble land.										
Serene	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock	65	7	Noble fir, western hemlock.
							Pacific silver fir	---	---	
							Noble fir	---	---	
							Mountain hemlock	---	---	
225	13A	Slight	Moderate	Slight	Slight	Severe	Douglas fir	129	13	Douglas fir.
Rugles							Western hemlock	---	---	
							Red alder	---	---	
							Black cottonwood	---	---	
							Sitka spruce	---	---	
							Western redcedar	---	---	
226	11W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir	115	11	Douglas fir, red alder.
Salal							Western redcedar	---	---	
							Western hemlock	---	---	
							Red alder	---	---	
227	13A	Slight	Moderate	Slight	Slight	Severe	Douglas fir	130	13	Douglas fir, red alder, western hemlock.
Sauk							Bigleaf maple	---	---	
							Red alder	---	---	
							Western hemlock	---	---	
							Western redcedar	---	---	
228, 229	11W	Slight	Moderate	Moderate	Severe	Severe	Douglas fir	116	11	Douglas fir, red alder.
Scamman							Red alder	---	---	
							Western hemlock	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
							Bitter cherry	---	---	
							Oregon ash	---	---	
230	11R	Moderate	Severe	Moderate	Severe	Severe	Douglas fir	116	11	Douglas fir, red alder.
Scamman							Red alder	---	---	
							Western hemlock	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
							Bitter cherry	---	---	
							Oregon ash	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
231---------- Seattle	6W	Slight	Severe	Severe	Severe	Severe	Red alder----------	85	6	Red alder.
							Western redcedar----	---	---	
							Black cottonwood----	---	---	
							Sitka spruce--------	---	---	
232---------- Serene	7F	Slight	Moderate	Moderate	Moderate	Slight	Western hemlock-----	65	7	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Mountain hemlock----	---	---	
233---------- Serene	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock-----	65	7	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Mountain hemlock----	---	---	
234**:										
Serene----------	7R	Moderate	Severe	Moderate	Moderate	Slight	Western hemlock-----	65	7	Noble fir, western hemlock.
							Pacific silver fir--	---	---	
							Noble fir----------	---	---	
							Mountain hemlock----	---	---	
Rock outcrop.										
235---------- Shalcar	6W	Slight	Severe	Severe	Severe	Severe	Red alder----------	85	6	Red alder, western redcedar.
							Western redcedar----	---	---	
							Western hemlock-----	---	---	
							Lodgepole pine------	---	---	
							Sitka spruce--------	---	---	
236---------- Si	12W	Slight	Moderate	Moderate	Moderate	Severe	Douglas fir---------	120	12	Douglas fir, red alder.
							Red alder----------	90	7	
							Black cottonwood----	---	---	
							Western redcedar----	---	---	
237---------- Skykomish	16F	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	106	16	Douglas fir, western hemlock.
							Douglas fir---------	108	10	
							Western redcedar----	---	---	
							Red alder----------	---	---	
238---------- Skykomish	16R	Moderate	Severe	Moderate	Slight	Moderate	Western hemlock-----	106	16	Douglas fir, western hemlock.
							Douglas fir---------	108	10	
							Western redcedar----	---	---	
							Red alder----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
239---------- Skykomish	13F	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	85	13	Douglas fir, western hemlock.
							Douglas fir---------	---	---	
							Western redcedar----	---	---	
							Red alder-----------	---	---	
240---------- Skykomish	16F	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	106	16	Douglas fir, western hemlock.
							Douglas fir---------	108	10	
							Western redcedar----	---	---	
							Red alder-----------	---	---	
241---------- Snoqualmie	10S	Slight	Moderate	Severe	Slight	Moderate	Douglas fir---------	110	10	Douglas fir, red alder.
							Red alder-----------	---	---	
							Western hemlock-----	---	---	
							Western redcedar----	---	---	
							Black cottonwood----	---	---	
242---------- Snoqualmie	7S	Slight	Moderate	Severe	Slight	Moderate	Douglas fir---------	85	7	Douglas fir, red alder.
							Red alder-----------	---	---	
							Western hemlock-----	---	---	
							Western redcedar----	---	---	
							Black cottonwood----	---	---	
243---------- Spukwush	13F	Slight	Moderate	Moderate	Slight	Moderate	Western hemlock-----	90	13	Western hemlock, Pacific silver fir, Douglas fir.
							Pacific silver fir--	---	---	
							Douglas fir---------	---	---	
244---------- Stahl	14R	Moderate	Severe	Moderate	Moderate	Moderate	Western hemlock-----	91	14	Western hemlock, Douglas fir, noble fir, Pacific silver fir.
							Douglas fir---------	95	8	
							Pacific silver fir--	---	---	
							Noble fir-----------	---	---	
							Western redcedar----	---	---	
245---------- Stahl	14D	Slight	Moderate	Moderate	Moderate	Moderate	Western hemlock-----	91	14	Western hemlock, Douglas fir, noble fir, Pacific silver fir.
							Douglas fir---------	95	8	
							Pacific silver fir--	---	---	
							Noble fir-----------	---	---	
							Western redcedar----	---	---	
246---------- Stahl	14R	Moderate	Severe	Moderate	Moderate	Moderate	Western hemlock-----	91	14	Western hemlock, Douglas fir, noble fir, Pacific silver fir.
							Douglas fir---------	95	8	
							Pacific silver fir--	---	---	
							Noble fir-----------	---	---	
							Western redcedar----	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
247---------- Sulsavar	20A	Slight	Moderate	Slight	Slight	Severe	Douglas fir--------- Western hemlock----- Western redcedar----- Red alder-----------	142 124 --- ---	14 20 --- ---	Douglas fir, red alder.
248---------- Sultan	12W	Slight	Moderate	Slight	Moderate	Severe	Douglas fir--------- Red alder----------- Western redcedar----	120 --- ---	12 --- ---	Douglas fir, red alder, western redcedar.
249---------- Teneriffe	10F	Slight	Moderate	Moderate	Slight	Slight	Douglas fir--------- Western hemlock----- Red alder----------- Bigleaf maple------- Western redcedar----	110 --- --- --- ---	10 --- --- --- ---	Douglas fir.
250---------- Teneriffe	10R	Moderate	Severe	Moderate	Slight	Slight	Douglas fir--------- Western hemlock----- Red alder----------- Bigleaf maple------- Western redcedar----	110 --- --- --- ---	10 --- --- --- ---	Douglas fir.
251, 252---------- Teneriffe	10F	Slight	Moderate	Moderate	Slight	Slight	Douglas fir--------- Western hemlock----- Red alder----------- Bigleaf maple------- Western redcedar----	110 --- --- --- ---	10 --- --- --- ---	Douglas fir.
253---------- Teneriffe	10R	Moderate	Severe	Moderate	Slight	Slight	Douglas fir--------- Western hemlock----- Red alder----------- Bigleaf maple------- Western redcedar----	110 --- --- --- ---	10 --- --- --- ---	Douglas fir.
254, 255, 256------ Tokul	19D	Slight	Moderate	Slight	Moderate	Severe	Douglas fir--------- Western hemlock----- Western redcedar----- Red alder----------- Bigleaf maple-------	130 117 --- --- ---	13 19 --- --- ---	Douglas fir, western hemlock, red alder.
257---------- Tokul	19R	Moderate	Severe	Slight	Moderate	Severe	Douglas fir--------- Western hemlock----- Western redcedar----- Red alder----------- Bigleaf maple-------	130 117 --- --- ---	13 19 --- --- ---	Douglas fir, western hemlock, red alder.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
258**:										
Tokul	19R	Severe	Severe	Slight	Moderate	Severe	Douglas fir	130	13	Douglas fir, western hemlock, red alder.
							Western hemlock	117	19	
							Western redcedar	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
Pastik	20R	Moderate	Severe	Slight	Moderate	Severe	Douglas fir	132	13	Douglas fir, red alder.
							Western hemlock	123	20	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
							Red alder	---	---	
259**:										
Tokul	10R	Severe	Severe	Slight	Moderate	Severe	Douglas fir	105	10	Douglas fir, western hemlock, red alder.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
							Bigleaf maple	---	---	
Pastik	10W	Slight	Moderate	Slight	Moderate	Severe	Douglas fir	105	10	Douglas fir, red alder.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
							Red alder	---	---	
261 Tukwila	6W	Slight	Severe	Severe	Severe	Severe	Red alder	85	6	Western redcedar, red alder.
							Western redcedar	---	---	
							Western hemlock	---	---	
							Sitka spruce	---	---	
262 Tusip	13F	Slight	Moderate	Moderate	Slight	Slight	Western hemlock	90	13	Western hemlock.
							Pacific silver fir	---	---	
							Douglas fir	---	---	
263 Tusip	13R	Moderate	Severe	Moderate	Slight	Slight	Western hemlock	90	13	Western hemlock.
							Pacific silver fir	---	---	
							Douglas fir	---	---	
264 Typic Haplorthods	17R	Severe	Severe	Slight	Moderate	Severe	Douglas fir	115	11	Douglas fir, western hemlock.
							Western hemlock	105	17	
							Bigleaf maple	---	---	
							Western redcedar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
265--Typic Udifluvents	12W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir	125	12	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
266--Typic Udifluvents	8W	Slight	Moderate	Moderate	Slight	Severe	Douglas fir	90	8	Douglas fir.
							Western hemlock	---	---	
							Western redcedar	---	---	
							Red alder	---	---	
267--Udifluvents	19W	Slight	Moderate	Severe	Slight	Slight	Western hemlock	100	19	Western hemlock, Douglas fir.
							Red alder	100	10	
							Douglas fir	115	11	
							Western redcedar	---	---	
268--Vailton	16A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	113	10	Douglas fir, western hemlock, red alder.
							Western hemlock	103	16	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
269--Vailton	16R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	113	10	Douglas fir, western hemlock, red alder.
							Western hemlock	103	16	
							Red alder	---	---	
							Bigleaf maple	---	---	
							Western redcedar	---	---	
270, 271--Voight	16A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	114	11	Douglas fir, western hemlock.
							Western hemlock	105	16	
							Red alder	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
272--Voight	16R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	114	11	Douglas fir, western hemlock.
							Western hemlock	105	16	
							Red alder	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
273--Welcome	14A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	106	10	Douglas fir, western hemlock.
							Western hemlock	89	14	
							Red alder	---	---	
							Western redcedar	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
274---------- Welcome	14R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir----------	106	10	Douglas fir, western hemlock.
							Western hemlock-----	89	14	
							Red alder----------	---	---	
							Western redcedar----	---	---	
275, 276---------- Wilkeson	12A	Slight	Moderate	Slight	Slight	Severe	Douglas fir----------	122	12	Douglas fir, red alder.
							Red alder----------	---	---	
							Western hemlock-----	---	---	
							Bigleaf maple-------	---	---	
							Western redcedar----	---	---	
							Bitter cherry-------	---	---	
277---------- Wilkeson	12R	Moderate	Severe	Slight	Slight	Severe	Douglas fir----------	122	12	Douglas fir, red alder.
							Red alder----------	---	---	
							Western hemlock-----	---	---	
							Bigleaf maple-------	---	---	
							Western redcedar----	---	---	
							Bitter cherry-------	---	---	
278, 279---------- Winston	18A	Slight	Moderate	Slight	Slight	Severe	Douglas fir----------	125	12	Douglas fir, red alder.
							Western hemlock-----	114	18	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
							Western redcedar----	---	---	
280---------- Winston	8A	Slight	Moderate	Slight	Slight	Severe	Douglas fir----------	90	8	Douglas fir, red alder.
							Western hemlock-----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	
							Western redcedar----	---	---	
281---------- Woodinville	7W	Slight	Severe	Severe	Severe	Severe	Red alder----------	90	7	Red alder, western redcedar.
							Western redcedar----	---	---	
							Black cottonwood----	---	---	
282---------- Zynbar	17A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir----------	123	12	Douglas fir, western hemlock.
							Western hemlock-----	110	17	
							Western redcedar----	---	---	
							Red alder----------	---	---	
							Bigleaf maple-------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
283---------- Zynbar	17R	Moderate	Severe	Slight	Slight	Moderate	Douglas fir	123	12	Douglas fir, western hemlock.
							Western hemlock	110	17	
							Red alder	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	
284---------- Zynbar	17A	Slight	Moderate	Slight	Slight	Moderate	Douglas fir	123	12	Douglas fir, western hemlock.
							Western hemlock	110	17	
							Red alder	---	---	
							Western redcedar	---	---	
							Bigleaf maple	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
1---------- Alderwood	Moderate: slope, small stones, wetness.	Moderate: slope, wetness, small stones.	Severe: slope, small stones.	Moderate: wetness.
2---------- Alderwood	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: wetness, slope.
3---------- Alkiridge	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.
4---------- Altapeak	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
5, 6---------- Altapeak	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
7*: Altapeak----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
8---------- Andic Cryumbrepts	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: slope, small stones.
9---------- Arents	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
10---------- Barneston	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
11---------- Barneston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
12---------- Barneston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
13---------- Barneston	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
14---------- Barneston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
15--- Barneston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
16--- Barneston	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
17--- Beausite	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
18, 19--- Beausite	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
20--- Belfast	Severe: flooding.	Moderate: dusty.	Moderate: flooding.	Moderate: dusty.
21--- Bellicum	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
22--- Bellicum	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
23--- Blethen	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
24--- Blethen	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
25--- Borohemists	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
26--- Bromo	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
27, 28, 29, 30--- Cattcreek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
31--- Cattcreek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
32--- Cayuse	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
33--- Cayuse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
34--- Chinkmin	Moderate: wetness.	Moderate: wetness.	Severe: slope.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
35--- Chinkmin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.
36--- Chinkmin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
37--- Chinkmin	Moderate: wetness.	Moderate: wetness.	Severe: slope.	Moderate: wetness.
38--- Chinkmin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.
39--- Christoff	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
40--- Christoff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
41--- Chuckanut	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
42--- Chuckanut	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
43--- Chuckanut	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
44--- Cinebar	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
45--- Cinebar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
46--- Cinebar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
47--- Cotteral	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
48--- Cotteral	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
49--- Crinker	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
50--- Cryofluvents	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight.
51--- Cryohemists	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
52--- Dobbs	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
53--- Edgewick	Severe: flooding.	Slight	Moderate: small stones, flooding.	Slight.
54--- Elwell	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.
55--- Elwell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
56, 57, 58, 59--- Ethania	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.
60--- Ethania	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.
61--- Foss	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
62--- Foss	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
63--- Gallup	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
64, 65--- Gallup	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
66--- Getchell	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.
67, 68--- Getchell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
69--- Greenwater	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.
70--- Grotto	Severe: flooding.	Moderate: too sandy, small stones.	Severe: small stones.	Moderate: too sandy.
71--- Hartnit	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
72--- Haywire	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
73--- Haywire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
74--- Haywire	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
75--- Haywire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
76--- Hinker	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
77, 78--- Hinker	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
79--- Humaquepts	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
80--- Index	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.
81, 82--- Index	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
83*: Index---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
84--- Jonas	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
85--- Jonas	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
86--- Jonas	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
87, 88--- Jonas	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
89--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
90, 91--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
92--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
93--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
94--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
95--- Kaleetan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
96--- Kanaskat	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
97--- Kanaskat	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
98--- Kanaskat	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
99--- Kanaskat	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
100--- Kapowsin	Severe: wetness.	Moderate: slope, wetness, small stones.	Severe: slope, small stones, wetness.	Moderate: wetness.
101--- Kapowsin	Severe: slope, wetness.	Severe: slope.	Severe: slope, small stones, wetness.	Moderate: wetness, slope.
102--- Kapowsin	Severe: slope, wetness.	Severe: slope.	Severe: slope, small stones, wetness.	Severe: slope.
103--- Kindy	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: slope, small stones.	Moderate: wetness.
104--- Kindy	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: wetness, slope.
105--- Kindy	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
106--- Klaber	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
107*:				
Klaber	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Cinebar	Slight	Slight	Moderate: slope, small stones.	Slight.
108--- Klapatche	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
109--- Klapatche	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
110*: Klapatche---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
111--- Klaus	Slight---	Slight---	Moderate: slope, cemented pan.	Slight.
112--- Klaus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
113--- Klaus	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
114--- Klaus	Slight---	Slight---	Moderate: slope, cemented pan.	Slight.
115--- Klaus	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
116--- Larrupin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
117--- Larrupin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
118--- Larrupin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
119--- Lemolo	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
120--- Littlejohn	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
121, 122--- Littlejohn	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
123--- Littlejohn	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
124, 125--- Littlejohn	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
126*: Littlejohn---	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
126*: Rock outcrop.				
127--Lynnwood	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
128--Marblemount	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
129, 130--Marblemount	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
131*: Marblemount	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
132--Mashel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
133--Mashel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
134--Melakwa	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
135, 136, 137--Melakwa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
138*: Melakwa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
139--Mowich	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.
140--Mukilteo	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
141--Nagrom	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
142--Nagrom	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
143--- Nagrom	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
144--- Nagrom	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
145*: Nagrom---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
146--- Nargar	Slight---	Slight---	Severe: slope.	Slight.
147--- Nargar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
148*: Nargar---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pastik---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
149--- National	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
150--- Neilton	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
151--- Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
152, 153--- Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
154--- Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
155--- Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
156*: Nimue---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
157--- Nooksack	Severe: flooding.	Moderate: dusty.	Moderate: flooding, dusty.	Moderate: dusty.
158--- Norma	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
159--- Oakes	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
160--- Oakes	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.
161--- Oakes	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
162--- Ogarty	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
163--- Ogarty	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
164*: Ogarty---	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
165--- Ohop	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones, wetness.	Slight.
166--- Ohop	Moderate: wetness.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.
167--- Olomount	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
168--- Olomount	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
169*: Olomount---	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
170--- Oridia	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
171*:				
Orthents	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.
Humods	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.
172--- Ovall	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
173--- Ovall	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
174--- Pastik	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope.
175, 176--- Persis	Slight	Slight	Moderate: slope.	Slight.
177--- Pheeney	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
178--- Pheeney	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
179--- Pheeney	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
180--- Pheeney	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
181*:				
Pheeney	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				
182--- Philippa	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
183--- Philippa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
184--- Pierking	Severe: flooding, wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
185*:				
Pierking	Severe: flooding, wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.
Borohemists	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
186*:				
Pierking	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.
Mowich	Severe: wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.
187--- Pilchuck	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight.
188--- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
189, 190--- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
191--- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
192, 193--- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
194*:				
Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
195*--- Pits	Severe: small stones, too sandy.	Severe: too sandy, small stones.	Severe: small stones, too sandy.	Severe: too sandy, small stones.
196--- Playco	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
197, 198--- Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
199--- Playco	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.
200--- Playco	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
201*:				
Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
202--Puget	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.
203--Ragnar	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
204--Ragnar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
205*:				
Ragnar	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Lynnwood	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
206*:				
Ragnar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lynnwood	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
207--Reggad	Severe: slope, large stones, excess humus.	Severe: slope, large stones, excess humus.	Severe: large stones, slope, excess humus.	Severe: large stones, excess humus, slope.
208*:				
Reggad	Severe: slope, large stones, excess humus.	Severe: slope, large stones, excess humus.	Severe: large stones, slope, excess humus.	Severe: large stones, excess humus, slope.
Haywire	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
209*:				
Reggad	Severe: slope, large stones, excess humus.	Severe: slope, large stones, excess humus.	Severe: large stones, slope, excess humus.	Severe: large stones, excess humus, slope.
Klapatche	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
210*:				
Reggad	Severe: slope, large stones, excess humus.	Severe: slope, large stones, excess humus.	Severe: large stones, slope, excess humus.	Severe: large stones, excess humus, slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
210*:				
Serene	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
211---------- Reichel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
212---------- Reichel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
213---------- Reichel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
214---------- Reichel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
215*---------- Riverwash	Severe: flooding, small stones, wetness.	Severe: wetness, too sandy, small stones.	Severe: small stones, too sandy, wetness.	Severe: wetness, too sandy, small stones.
216---------- Rober	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
217---------- Rober	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
218*. Rock outcrop				
219*: Rock outcrop.				
Cattcreek----------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
220*: Rock outcrop.				
Cayuse----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
221*: Rock outcrop.				
Haywire----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
222*: Rock outcrop.				
Rubble land----------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.
Haywire----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
223*:				
Rock outcrop.				
Rubble land	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.
Serene	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
224*	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.
Rubble land				
225	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight.
Rugles				
226	Severe: flooding.	Slight	Moderate: flooding.	Slight.
Salal				
227	Slight	Slight	Moderate: slope, small stones.	Slight.
Sauk				
228	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.
Scamman				
229	Severe: slope, wetness.	Severe: slope, wetness.	Severe: slope, wetness.	Severe: wetness.
Scamman				
230	Severe: slope, wetness.	Severe: slope, wetness.	Severe: slope, wetness.	Severe: wetness, slope.
Scamman				
231	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
Seattle				
232	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Serene				
233	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Serene				
234*:				
Serene	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Rock outcrop.				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
235--Shalcar	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
236--Si	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight.
237--Skykomish	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
238--Skykomish	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
239--Skykomish	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
240--Skykomish	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.
241, 242--Snoqualmie	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.
243--Spukwush	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
244--Stahl	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
245--Stahl	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
246--Stahl	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
247--Sulsavar	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.
248--Sultan	Severe: flooding.	Moderate: wetness, dusty.	Moderate: wetness, dusty.	Moderate: dusty.
249--Teneriffe	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.
250--Teneriffe	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
251, 252---------- Teneriffe	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
253---------- Teneriffe	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
254---------- Tokul	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.
255---------- Tokul	Moderate: slope, small stones, wetness.	Moderate: slope, wetness, small stones.	Severe: slope, small stones.	Moderate: wetness.
256---------- Tokul	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: wetness, slope.
257---------- Tokul	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
258*, 259*: Tokul----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Pastik----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
260---------- Treen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
261---------- Tukwila	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.
262---------- Tusip	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
263---------- Tusip	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
264---------- Typic Haplorthods	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
265, 266---------- Typic Udifluvents	Severe: flooding.	Slight----------	Moderate: flooding.	Slight.
267---------- Udifluvents	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight.
268---------- Vailton	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
269--Vailton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
270--Voight	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
271--Voight	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
272--Voight	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
273--Welcome	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
274--Welcome	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
275--Wilkeson	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope, small stones.	Moderate: dusty.
276--Wilkeson	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
277--Wilkeson	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
278--Winston	Slight	Slight	Moderate: slope, small stones.	Slight.
279, 280--Winston	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
281--Woodinville	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.
282--Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
283--Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
284--Zynbar	Slight	Slight	Severe: slope.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1, 2---------- Alderwood	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
3---------- Alkiridge	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
4, 5, 6---------- Altapeak	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
7*: Altapeak----------	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.											
8---------- Andic Cryumbrepts	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
9---------- Arents	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
10, 11---------- Barneston	Fair	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
12---------- Barneston	Poor	Poor	Fair	Fair	Good	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
13, 14---------- Barneston	Fair	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
15---------- Barneston	Poor	Poor	Fair	Fair	Good	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
16---------- Barneston	Fair	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
17---------- Beausite	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
18---------- Beausite	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
19---------- Beausite	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
20---------- Belfast	Fair	Fair	Good	Good	Good	Good	Poor	Fair	Fair	Good	Poor.
21, 22---------- Bellicum	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
23---------- Blethen	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
24---- Blethen	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
25---- Borohemists	Very poor.	Poor	Good	Very poor.	Very poor.	Poor	Good	Fair	Poor	---	Fair.
26---- Bromo	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
27---- Cattcreek	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
28---- Cattcreek	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
29---- Cattcreek	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
30---- Cattcreek	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
31---- Cattcreek	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
32, 33---- Cayuse	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
34---- Chinkmin	Poor	Poor	Fair	Poor	Fair	Fair	Poor	Very poor.	Poor	Fair	Poor.
35---- Chinkmin	Poor	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
36---- Chinkmin	Very poor.	Very poor.	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
37---- Chinkmin	Poor	Poor	Fair	Poor	Fair	Fair	Poor	Very poor.	Poor	Fair	Poor.
38---- Chinkmin	Poor	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
39---- Christoff	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
40---- Christoff	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
41, 42---- Chuckanut	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
43---- Chuckanut	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
44, 45---- Cinebar	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
46---- Cinebar	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
47, 48---------- Cotteral	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
49---------- Crinker	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
50---------- Cryofluvents	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
51---------- Cryohemists	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Good	Good	Very poor.	Poor	Good.
52---------- Dobbs	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
53---------- Edgewick	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
54---------- Elwell	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
55---------- Elwell	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
56, 57, 58, 59----- Ethania	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
60---------- Ethania	Very poor.	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
61, 62---------- Foss	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
63, 64, 65--------- Gallup	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
66, 67, 68--------- Getchell	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
69---------- Greenwater	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
70---------- Grotto	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
71---------- Hartnit	Very poor.	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
72---------- Haywire	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
73---------- Haywire	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
74---------- Haywire	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
75---------- Haywire	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
76, 77, 78--------- Hinker	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.
79---------- Humaquepts	Poor	Poor	Fair	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair.
80, 81, 82--------- Index	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
83*: Index----------	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
84---------- Jonas	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
85---------- Jonas	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
86, 87---------- Jonas	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
88---------- Jonas	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
89, 90, 91, 92, 93, 94, 95---------- Kaleetan	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
96---------- Kanaskat	Fair	Good	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
97---------- Kanaskat	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
98---------- Kanaskat	Fair	Good	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
99---------- Kanaskat	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
100, 101---------- Kapowsin	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
102---------- Kapowsin	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
103---------- Kindy	Poor	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
104, 105---------- Kindy	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
106---------- Klaber	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
107*:											
Klaber	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Poor.
Cinebar	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
108--- Klapatche	Poor	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
109--- Klapatche	Very poor.	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
110*:											
Klapatche	Very poor.	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
111, 112--- Klaus	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
113--- Klaus	Very poor.	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
114--- Klaus	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
115--- Klaus	Very poor.	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
116--- Larrupin	Fair	Good	Good	Fair	Fair	Good	Very poor.	Very poor.	Good	Good	Very poor.
117--- Larrupin	Very poor.	Very poor.	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
118--- Larrupin	Fair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
119--- Lemolo	Poor	Poor	Good	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
120, 121, 122, 123, 124, 125--- Littlejohn	Poor	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
126*:											
Littlejohn	Very poor.	Poor	Good	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.											
127--- Lynnwood	Poor	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
128, 129, 130--- Marblemount	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
131*:											
Marblemount	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
132 Mashel	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
133 Mashel	Very poor.	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
134 Melakwa	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
135, 136, 137 Melakwa	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
138*:											
Melakwa	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.											
139 Mowich	Fair	Good	Good	---	Good	Good	Poor	Very poor.	Good	Good	Very poor.
140 Mukilteo	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	---	Good.
141, 142 Nagrom	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
143, 144 Nagrom	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
145*:											
Nagrom	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
146 Nargar	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
147 Nargar	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
148*:											
Nargar	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Pastik	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
149 National	Fair	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
150---------- Neilton	Poor	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
151, 152, 153, 154, 155---------- Nimue	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
156*: Nimue----------	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
157---------- Nooksack	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
158---------- Norma	Poor	Poor	Fair	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
159, 160---------- Oakes	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
161---------- Oakes	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
162, 163---------- Ogarty	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
164*: Ogarty----------	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.											
165, 166---------- Ohop	Poor	Poor	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
167, 168---------- Olomount	Poor	Fair	Good	Fair	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.
169*: Olomount----------	Very poor.	Very poor.	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.											
170---------- Oridia	Good	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair.
171*: Orthents----------	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Humods----------	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
172, 173---------- Ovall	Poor	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
174---------- Pastik	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
175, 176---------- Persis	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
177, 178---------- Pheeney	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
179---------- Pheeney	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
180---------- Pheeney	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
181*: Pheeney---------- Rock outcrop.	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
182---------- Philippa	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
183---------- Philippa	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
184---------- Pierking	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
185*: Pierking---------- Borohemists--------	Poor Very poor.	Poor Poor	Fair Good	Fair Very poor.	Fair Very poor.	Fair Poor	Poor Good	Very poor. Fair	Poor Poor	Fair ---	Very poor. Fair.
186*: Pierking---------- Mowich----------	Poor Fair	Poor Good	Fair Good	Fair ---	Fair Good	Fair Good	Poor Very poor.	Very poor. Very poor.	Poor Good	Fair Good	Very poor. Very poor.
187---------- Pilchuck	Poor	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
188---------- Pitcher	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
189, 190---------- Pitcher	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
191---------- Pitcher	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
192, 193---------- Pitcher	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
194*: Pitcher----------	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Rock outcrop.											
195*---------- Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
196, 197, 198------ Playco	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
199, 200---------- Playco	Very poor.	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.
201*: Playco----------	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
202---------- Puget	Good	Good	Good	Fair	Fair	Good	Good	Fair	Good	Fair	Fair.
203, 204---------- Ragnar	Fair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
205*: Ragnar----------	Fair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lynnwood----------	Poor	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
206*: Ragnar----------	Poor	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Lynnwood----------	Very poor.	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
207---------- Reggad	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
208*: Reggad----------	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
208*:											
Haywire	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
209*:											
Reggad	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Klapatche	Very poor.	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.											
210*:											
Reggad	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Serene	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
211, 212 Reichel	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
213, 214 Reichel	Poor	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
215* Riverwash	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
216 Rober	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
217 Rober	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
218*. Rock outcrop											
219*:											
Rock outcrop.											
Cattcreek	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
220*:											
Rock outcrop.											
Cayuse	Very poor.	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
221*:											
Rock outcrop.											
Haywire	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
222*:											
Rock outcrop.											
Rubble land	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Haywire	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
223*:											
Rock outcrop.											
Rubble land	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Serene	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
224* Rubble land	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
225 Rugles	Fair	Good	Good	---	Good	Good	Poor	Very poor.	Good	Good	Very poor.
226 Salal	Fair	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
227 Sauk	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
228, 229 Scamman	Fair	Fair	Good	---	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
230 Scamman	Poor	Fair	Good	---	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
231 Seattle	Poor	Fair	Fair	Poor	Fair	Fair	Good	Good	Fair	Fair	Good.
232, 233 Serene	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
234*:											
Serene	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.											
235 Shalcar	Poor	Poor	Good	Fair	Good	Good	Good	Good	Fair	Good	Good.
236 Si	Fair	Fair	Good	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
237 Skykomish	Fair	Fair	Good	Fair	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
238---- Skykomish	Poor	Poor	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
239---- Skykomish	Fair	Fair	Good	Fair	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.
240---- Skykomish	Poor	Poor	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
241, 242---- Snoqualmie	Poor	Poor	Fair	Fair	Good	Fair	Very poor.	Very poor.	Poor	Good	Very poor.
243---- Spukwush	Poor	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
244---- Stahl	Very poor.	Very poor.	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
245---- Stahl	Poor	Poor	Good	Fair	Fair	Good	Very poor.	Very poor.	Fair	Good	Very poor.
246---- Stahl	Very poor.	Very poor.	Good	Fair	Fair	Good	Very poor.	Very poor.	Poor	Good	Very poor.
247---- Sulsavar	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
248---- Sultan	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
249---- Teneriffe	Fair	Good	Good	Fair	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
250---- Teneriffe	Very poor.	Very poor.	Good	Fair	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
251, 252---- Teneriffe	Fair	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
253---- Teneriffe	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
254, 255, 256---- Tokul	Fair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
257---- Tokul	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
258*, 259*:											
Tokul----	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Pastik----	Very poor.	Very poor.	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
260---- Treen	Very poor.	Poor	Fair	---	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
261---- Tukwila	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
262, 263---------- Tusip	Poor	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
264---------- Typic Haplorthods	Very poor.	Very poor.	Good	Good	Good	Fair	Very poor.	Very poor.	Poor	Good	Very poor.
265, 266---------- Typic Udifluvents	Fair	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
267---------- Udifluvents	Fair	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
268, 269---------- Vailton	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
270, 271---------- Voight	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
272---------- Voight	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
273---------- Welcome	Fair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
274---------- Welcome	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
275, 276---------- Wilkeson	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
277---------- Wilkeson	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
278---------- Winston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
279, 280---------- Winston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
281---------- Woodinville	Good	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair.
282---------- Zynbar	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
283---------- Zynbar	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
284---------- Zynbar	Poor	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1---------- Alderwood	Severe: wetness.	Moderate: wetness, slope, large stones.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, large stones.	Moderate: small stones, wetness, slope.
2---------- Alderwood	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
3---------- Alkiridge	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
4, 5, 6---------- Altapeak	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
7*: Altapeak--------- Rock outcrop.	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
8---------- Andic Cryumbrepts	Severe: depth to rock, large stones, slope.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, slope.
9---------- Arents	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Severe: droughty.
10---------- Barneston	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: small stones, large stones.
11, 12---------- Barneston	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
13---------- Barneston	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: small stones, large stones.
14, 15, 16-------- Barneston	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
17, 18, 19-------- Beausite	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
20---- Belfast	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
21, 22---- Bellicum	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: small stones, slope.
23, 24---- Blethen	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
25---- Borohemists	Severe: excess humus, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
26---- Bromo	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: small stones, slope.
27, 28---- Cattcreek	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
29, 30---- Cattcreek	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
31---- Cattcreek	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
32, 33---- Cayuse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
34---- Chinkmin	Severe: wetness.	Moderate: wetness, large stones.	Severe: wetness.	Moderate: wetness, slope, large stones.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
35, 36---- Chinkmin	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
37---- Chinkmin	Severe: wetness.	Moderate: wetness, large stones.	Severe: wetness.	Moderate: wetness, slope, large stones.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
38---- Chinkmin	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
39, 40---- Christoff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
41---- Chuckanut	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
42, 43---------- Chuckanut	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
44---------- Cinebar	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
45, 46---------- Cinebar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
47, 48---------- Cotteral	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
49---------- Crinker	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
50---------- Cryofluvents	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
51---------- Cryohemists	Severe: excess humus, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.
52---------- Dobbs	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
53---------- Edgewick	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
54, 55---------- Elwell	Severe: cutbanks cave, wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
56, 57, 58, 59---- Ethania	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
60---------- Ethania	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
61, 62---------- Foss	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
63, 64, 65-------- Gallup	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
66---------- Getchell	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
67, 68---------- Getchell	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
69---------- Greenwater	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
70---------- Grotto	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: small stones, droughty.
71---------- Hartnit	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
72, 73, 74, 75---- Haywire	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
76, 77, 78-------- Hinker	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
79---------- Humaquepts	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, frost action.	Severe: wetness.
80, 81, 82-------- Index	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
83*: Index----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Rock outcrop.						
84, 85, 86, 87, 88---------- Jonas	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
89, 90, 91, 92, 93, 94, 95------- Kaleetan	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
96, 97, 98, 99---- Kanaskat	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
100---------- Kapowsin	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope.	Moderate: small stones, wetness, slope.
101, 102---------- Kapowsin	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.
103---------- Kindy	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones, large stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
104, 105---------- Kindy	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
106---------- Klaber	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: ponding.
107*: Klaber----------	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: ponding.
Cinebar----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Severe: low strength.	Slight.
108, 109---------- Klapatche	Severe: depth to rock, cutbanks cave, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
110*: Klapatche--------	Severe: depth to rock, cutbanks cave, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Rock outcrop.						
111---------- Klaus	Severe: cutbanks cave.	Slight---------	Moderate: cemented pan.	Moderate: slope.	Slight---------	Moderate: droughty, cemented pan.
112---------- Klaus	Severe: cutbanks cave.	Moderate: slope.	Moderate: cemented pan, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, cemented pan.
113---------- Klaus	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
114---------- Klaus	Severe: cutbanks cave.	Slight---------	Moderate: cemented pan.	Moderate: slope.	Slight---------	Moderate: droughty, cemented pan.
115---------- Klaus	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
116, 117---------- Larrupin	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
118---------- Larrupin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
119---------- Lemolo	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
120, 121, 122, 123, 124, 125---- Littlejohn	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
126*: Littlejohn-------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
127---------- Lynnwood	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
128, 129, 130----- Marblemount	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
131*: Marblemount------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
132, 133---------- Mashel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
134, 135, 136, 137---------- Melakwa	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
138*: Melakwa----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
139---------- Mowich	Severe: wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
140---------- Mukilteo	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
141, 142---------- Nagrom	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
143, 144 Nagrom	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
145*: Nagrom	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
146 Nargar	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
147 Nargar	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
148*: Nargar	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pastik	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
149 National	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: small stones.
150 Neilton	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Severe: droughty.
151, 152, 153, 154, 155 Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
156*: Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
157 Nooksack	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
158 Norma	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
159, 160, 161 Oakes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
162, 163 Ogarty	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
164*:						
Ogarty	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
165--- Ohop	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Moderate: droughty.
166--- Ohop	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Severe: small stones.
167, 168--- Olomount	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
169*:						
Olomount	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
170--- Oridia	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
171*:						
Orthents	Severe: depth to rock, cutbanks cave, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, droughty, slope.
Humods	Severe: depth to rock, cutbanks cave, large stones.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, droughty, slope.
172, 173--- Ovall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
174--- Pastik	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
175, 176--- Persis	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Slight---	Slight.
177, 178--- Pheeney	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
179, 180--- Pheeney	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
181*:						
Pheeney	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
182, 183---------- Philippa	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
184---------- Pierking	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, frost action.	Severe: wetness, droughty.
185*:						
Pierking	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, frost action.	Severe: wetness, droughty.
Borohemists	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding, frost action.	Severe: ponding, excess humus.
186*:						
Pierking	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, droughty.
Mowich	Severe: wetness.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, slope.	Moderate: low strength, wetness, slope.	Moderate: wetness, slope.
187---------- Pilchuck	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: droughty.
188, 189, 190, 191, 192, 193---- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
194*:						
Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
195*---------- Pits	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: small stones, droughty.
196, 197, 198----- Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
199, 200---------- Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
201*:						
Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
201*: Rock outcrop.						
202--- Puget	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Moderate: wetness, flooding.
203--- Ragnar	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
204--- Ragnar	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
205*: Ragnar---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Lynnwood---	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
206*: Ragnar---	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lynnwood---	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
207--- Reggad	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, excess humus.
208*: Reggad---	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, excess humus.
Haywire---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
209*: Reggad---	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, excess humus.
Klapatche---	Severe: depth to rock, cutbanks cave, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Rock outcrop.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
210*:						
Reggad	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, excess humus.
Serene	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
211, 212, 213, 214--Reichel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
215*--Riverwash	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: small stones, wetness, droughty.
216, 217--Rober	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
218*. Rock outcrop.						
219*: Rock outcrop.						
Cattcreek	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
220*: Rock outcrop.						
Cayuse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
221*: Rock outcrop.						
Haywire	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
222*: Rock outcrop.						
Rubble land	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
Haywire	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
223*:						
Rock outcrop.						
Rubble land	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
Serene	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
224*						
Rubble land	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
225						
Rugles	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
226						
Salal	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
227						
Sauk	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
228						
Scamman	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
229, 230						
Scamman	Severe: wetness, slope.	Severe: wetness, shrink-swell, slope.	Severe: wetness, slope, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, wetness.	Severe: wetness, slope.
231						
Seattle	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
232, 233						
Serene	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
234*:						
Serene	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Rock outcrop.						
235						
Shalcar	Severe: cutbanks cave, excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
236						
Si	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
237, 238---------- Skykomish	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
239---------- Skykomish	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
240---------- Skykomish	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.
241, 242---------- Snoqualmie	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
243---------- Spukwush	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
244, 245, 246----- Stahl	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
247---------- Sulsavar	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
248---------- Sultan	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: shrink-swell, low strength, wetness.	Slight.
249, 250---------- Teneriffe	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
251, 252, 253----- Teneriffe	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
254---------- Tokul	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: small stones, wetness.
255---------- Tokul	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope.	Moderate: small stones, wetness, slope.
256, 257---------- Tokul	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
258*, 259*: Tokul----------	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
258*, 259*: Pastik	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope.	Severe: slope.
260--- Treen	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope, frost action.	Severe: slope, depth to rock.
261--- Tukwila	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding.	Severe: ponding, excess humus.
262, 263--- Tusip	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
264--- Typic Haplorthods	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
265, 266--- Typic Udifluvents	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
267--- Udifluvents	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
268, 269--- Vailton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
270--- Voight	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
271, 272--- Voight	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
273, 274--- Welcome	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
275--- Wilkeson	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: small stones.
276, 277--- Wilkeson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones.
278--- Winston	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Slight---	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
279, 280---------- Winston	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
281---------- Woodinville	Severe: excess humus, wetness.	Severe: subsides, flooding.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding.	Severe: subsides.	Moderate: wetness.
282---------- Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
283---------- Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
284---------- Zynbar	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Severe: low strength, frost action.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1---------- Alderwood	Severe: cemented pan, wetness.	Severe: seepage, cemented pan, slope.	Severe: seepage, wetness.	Severe: cemented pan, seepage.	Poor: cemented pan, small stones.
2---------- Alderwood	Severe: cemented pan, wetness, slope.	Severe: seepage, cemented pan, slope.	Severe: seepage, wetness, slope.	Severe: cemented pan, seepage, slope.	Poor: cemented pan, small stones, slope.
3---------- Alkiridge	Severe: cemented pan, wetness, slope.	Severe: seepage, cemented pan, slope.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
4, 5, 6---------- Altapeak	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
7*: Altapeak----------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Rock outcrop.					
8---------- Andic Cryumbrepts	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
9---------- Arents	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
10---------- Barneston	Severe: poor filter.	Severe: seepage, large stones.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
11, 12---------- Barneston	Severe: poor filter, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
13---------- Barneston	Severe: poor filter.	Severe: seepage, large stones.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
14, 15, 16---------- Barneston	Severe: poor filter, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
17, 18, 19---------- Beausite	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
20---------- Belfast	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Fair: too sandy.
21, 22---------- Bellicum	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: seepage, small stones, slope.
23, 24---------- Blethen	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
25---------- Borohemists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
26---------- Bromo	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: hard to pack, slope.
27, 28---------- Cattcreek	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
29, 30---------- Cattcreek	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
31---------- Cattcreek	Severe: wetness, poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
32, 33---------- Cayuse	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
34---------- Chinkmin	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.
35, 36---------- Chinkmin	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
37--Chinkmin	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.
38--Chinkmin	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
39, 40--Christoff	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: slope.	Severe: slope.	Poor: slope.
41--Chuckanut	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Fair: depth to rock, small stones, slope.
42, 43--Chuckanut	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
44--Cinebar	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: hard to pack.
45, 46--Cinebar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: hard to pack, slope.
47, 48--Cotteral	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: hard to pack, slope.
49--Crinker	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
50--Cryofluvents	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, depth to rock, seepage.	Severe: flooding, seepage.	Poor: too sandy, small stones.
51--Cryohemists	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
52--Dobbs	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
53--Edgewick	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, too sandy.	Severe: flooding.	Poor: too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
54, 55---------- Elwell	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
56, 57, 58, 59------ Ethania	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: large stones, slope.
60---------- Ethania	Severe: wetness, slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
61, 62---------- Foss	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
63, 64, 65---------- Gallup	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
66---------- Getchell	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.
67, 68---------- Getchell	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
69---------- Greenwater	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
70---------- Grotto	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
71---------- Hartnit	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
72, 73, 74, 75------ Haywire	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
76, 77, 78---------- Hinker	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
79---------- Humaquepts	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: too sandy, small stones, wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
80, 81, 82---------- Index	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
83*: Index----------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Rock outcrop.					
84, 85---------- Jonas	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: hard to pack, small stones, slope.
86, 87, 88---------- Jonas	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: hard to pack, large stones, slope.
89, 90, 91---------- Kaleetan	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
92, 93---------- Kaleetan	Severe: wetness, slope.	Severe: seepage, slope, wetness.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
94, 95---------- Kaleetan	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
96, 97, 98, 99------ Kanaskat	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
100---------- Kapowsin	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan, wetness.	Poor: cemented pan, small stones.
101, 102---------- Kapowsin	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, wetness, slope.	Poor: cemented pan, small stones, slope.
103---------- Kindy	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.
104, 105---------- Kindy	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
106---------- Klaber	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
107*: Klaber----------	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
Cinebar----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Poor: hard to pack.
108, 109---------- Klapatche	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
110*: Klapatche----------	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
Rock outcrop.					
111---------- Klaus	Severe: cemented pan, poor filter.	Severe: seepage, cemented pan.	Severe: seepage, too sandy.	Severe: cemented pan, seepage.	Poor: cemented pan, seepage, too sandy.
112---------- Klaus	Severe: cemented pan, poor filter.	Severe: seepage, cemented pan, slope.	Severe: seepage, too sandy.	Severe: cemented pan, seepage.	Poor: cemented pan, seepage, too sandy.
113---------- Klaus	Severe: cemented pan, poor filter, slope.	Severe: seepage, cemented pan, slope.	Severe: seepage, slope, too sandy.	Severe: cemented pan, seepage, slope.	Poor: cemented pan, seepage, too sandy.
114---------- Klaus	Severe: cemented pan, poor filter.	Severe: seepage, cemented pan.	Severe: seepage, too sandy.	Severe: cemented pan, seepage.	Poor: cemented pan, seepage, too sandy.
115---------- Klaus	Severe: cemented pan, poor filter, slope.	Severe: seepage, cemented pan, slope.	Severe: seepage, slope, too sandy.	Severe: cemented pan, seepage, slope.	Poor: cemented pan, seepage, too sandy.
116, 117---------- Larrupin	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: small stones, slope.
118---------- Larrupin	Severe: slope.	Severe: seepage, slope.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
119---------- Lemolo	Severe: wetness, percs slowly.	Moderate: seepage, slope, excess humus.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
120, 121, 122, 123, 124, 125---------- Littlejohn	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
126*: Littlejohn----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
127---------- Lynnwood	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
128, 129---------- Marblemount	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
130---------- Marblemount	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, small stones.
131*: Marblemount--------	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
132, 133---------- Mashel	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
134, 135, 136, 137-- Melakwa	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
138*: Melakwa----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Rock outcrop.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
139---------- Mowich	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
140---------- Mukilteo	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
141, 142, 143, 144-- Nagrom	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
145*: Nagrom----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
146---------- Nargar	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
147---------- Nargar	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
148*: Nargar----------	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Pastik----------	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
149---------- National	Severe: poor filter.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: thin layer.
150---------- Neilton	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
151, 152, 153, 154, 155---------- Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
156*:					
Nimue	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, small stones, slope.
Rock outcrop.					
157---------- Nooksack	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Fair: wetness.
158---------- Norma	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding.
159---------- Oakes	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
160, 161---------- Oakes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
162, 163---------- Ogarty	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
164*:					
Ogarty	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Rock outcrop.					
165---------- Ohop	Severe: wetness, percs slowly.	Severe: seepage.	Moderate: wetness.	Moderate: wetness.	Poor: small stones.
166---------- Ohop	Severe: wetness, percs slowly.	Severe: seepage, slope.	Moderate: wetness.	Moderate: wetness.	Poor: small stones.
167, 168---------- Olomount	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
169*:					
Olomount	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Rock outcrop.					
170---------- Oridia	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
171*:					
Orthents	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, small stones.
Humods	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, small stones.
172, 173--- Ovall	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
174--- Pastik	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
175, 176--- Persis	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
177, 178--- Pheeney	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
179, 180--- Pheeney	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
181*:					
Pheeney	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
182, 183--- Philippa	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
184--- Pierking	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: seepage, small stones, wetness.
185*:					
Pierking	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: seepage, small stones, wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
185*:					
Borohemists	Severe: ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
186*:					
Pierking	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: seepage, small stones, wetness.
Mowich	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
187--- Pilchuck	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
188, 189, 190, 191, 192, 193--- Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
194*:					
Pitcher	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
195*--- Pits	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Slight	Poor: seepage, too sandy, small stones.
196, 197, 198--- Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
199, 200--- Playco	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
201*:					
Playco	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
202--- Puget	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
203--Ragnar	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
204--Ragnar	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
205*:					
Ragnar	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Lynnwood	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
206*:					
Ragnar	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Lynnwood	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
207--Reggad	Severe: poor filter, slope, large stones.	Severe: seepage, slope, excess humus.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
208*:					
Reggad	Severe: poor filter, slope, large stones.	Severe: seepage, slope, excess humus.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
Haywire	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
209*:					
Reggad	Severe: poor filter, slope, large stones.	Severe: seepage, slope, excess humus.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
Klapatche	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
Rock outcrop.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
210*:					
Reggad	Severe: poor filter, slope, large stones.	Severe: seepage, slope, excess humus.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
Serene	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
211, 212, 213, 214--Reichel	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: hard to pack, slope.
215*--Riverwash	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: too sandy, small stones, wetness.
216, 217--Rober	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
218*. Rock outcrop					
219*: Rock outcrop.					
Cattcreek	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
220*: Rock outcrop.					
Cayuse	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
221*: Rock outcrop.					
Haywire	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
222*: Rock outcrop.					
Rubble land	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
222*:					
Haywire	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
223*:					
Rock outcrop.					
Rubble land	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.
Serene	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
224* Rubble land	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.
225 Rugles	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
226 Salal	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
227 Sauk	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: seepage.	Slight	Good.
228 Scamman	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
229, 230 Scamman	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope, too clayey.	Severe: wetness, slope.	Poor: too clayey, hard to pack, slope.
231 Seattle	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
232, 233 Serene	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
234*:					
Serene	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, seepage, too sandy.
Rock outcrop.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
235--- Shalcar	Severe: ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
236--- Si	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
237, 238--- Skykomish	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
239--- Skykomish	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
240--- Skykomish	Severe: poor filter, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
241, 242--- Snoqualmie	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
243--- Spukwush	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
244, 245, 246--- Stahl	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
247--- Sulsavar	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
248--- Sultan	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness, thin layer.
249, 250--- Teneriffe	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
251, 252, 253--- Teneriffe	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
254--- Tokul	Severe: cemented pan, wetness.	Severe: cemented pan, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
255---------- Tokul	Severe: cemented pan, wetness.	Severe: cemented pan, slope, wetness.	Severe: wetness.	Severe: cemented pan.	Poor: cemented pan, small stones.
256, 257---------- Tokul	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
258*, 259*: Tokul----------	Severe: cemented pan, wetness, slope.	Severe: cemented pan, slope, wetness.	Severe: wetness, slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
Pastik----------	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
260---------- Treen	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
261---------- Tukwila	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding.	Poor: ponding, excess humus.
262, 263---------- Tusip	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
264---------- Typic Haplorthods	Severe: cemented pan, slope.	Severe: cemented pan, slope.	Severe: slope.	Severe: cemented pan, slope.	Poor: cemented pan, small stones, slope.
265, 266---------- Typic Udifluvents	Severe: flooding.	Severe: flooding.	Severe: flooding, too sandy.	Severe: flooding.	Poor: too sandy.
267---------- Udifluvents	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Poor: small stones.
268, 269---------- Vailton	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: hard to pack, slope.
270---------- Voight	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: hard to pack.
271, 272---------- Voight	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: hard to pack, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
273, 274---------- Welcome	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
275---------- Wilkeson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
276, 277---------- Wilkeson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
278---------- Winston	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
279, 280---------- Winston	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
281---------- Woodinville	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: wetness.	Severe: wetness.	Poor: thin layer.
282---------- Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: hard to pack, slope.
283---------- Zynbar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: hard to pack, slope.
284---------- Zynbar	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.	Slight----------	Poor: hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1---------- Alderwood	Fair: thin layer, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
2---------- Alderwood	Fair: thin layer, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
3---------- Alkiridge	Fair: thin layer, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
4---------- Altapeak	Fair: depth to rock, thin layer, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, area reclaim.
5, 6---------- Altapeak	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, area reclaim.
7*: Altapeak----------	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, area reclaim.
Rock outcrop.				
8---------- Andic Cryumbrepts	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
9---------- Arents	Good----------	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
10---------- Barneston	Fair: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
11---------- Barneston	Fair: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
12--Barneston	Poor: slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
13--Barneston	Fair: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
14--Barneston	Fair: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
15--Barneston	Poor: slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
16--Barneston	Fair: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
17--Beausite	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
18, 19--Beausite	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
20--Belfast	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
21--Bellicum	Fair: depth to rock, thin layer, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
22--Bellicum	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
23--Blethen	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
24--Blethen	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
25--Borohemists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
26--- Bromo	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, slope.
27, 28--- Cattcreek	Poor: slope.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
29, 30--- Cattcreek	Poor: slope.	Improbable: small stones.	Probable---	Poor: too sandy, small stones, area reclaim.
31--- Cattcreek	Fair: thin layer, slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, small stones, area reclaim.
32--- Cayuse	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
33--- Cayuse	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
34--- Chinkmin	Fair: thin layer, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
35--- Chinkmin	Fair: thin layer, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
36--- Chinkmin	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
37--- Chinkmin	Fair: thin layer, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
38--- Chinkmin	Fair: thin layer, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
39--- Christoff	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
40--- Christoff	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
41--Chuckanut	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
42--Chuckanut	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
43--Chuckanut	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
44--Cinebar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
45--Cinebar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
46--Cinebar	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
47--Cotteral	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, slope.
48--Cotteral	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, slope.
49--Crinker	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
50--Cryofluvents	Fair: depth to rock, thin layer, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, area reclaim.
51--Cryohemists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
52--Dobbs	Fair: thin layer, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
53--Edgewick	Good	Probable	Probable	Poor: too sandy, area reclaim.
54--Elwell	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
55--Elwell	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
56, 57, 58, 59--Ethania	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
60--Ethania	Fair: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
61--Foss	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
62--Foss	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
63--Gallup	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
64, 65--Gallup	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
66--Getchell	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
67--Getchell	Fair: thin layer, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
68--Getchell	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
69--Greenwater	Good	Probable	Probable	Poor: too sandy, area reclaim.
70--Grotto	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
71--Hartnit	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
72--- Haywire	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
73--- Haywire	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
74--- Haywire	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
75--- Haywire	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
76--- Hinker	Poor: depth to rock.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
77, 78--- Hinker	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
79--- Humaquepts	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones, area reclaim.
80--- Index	Fair: depth to rock, thin layer, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
81, 82--- Index	Poor: slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
83*: Index--- Rock outcrop.	Poor: slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
84--- Jonas	Fair: depth to rock, shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
85--- Jonas	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
86--- Jonas	Fair: low strength, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
87, 88--- Jonas	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
89--- Kaleetan	Fair: slope.	Probable---	Probable---	Poor: small stones, area reclaim, slope.
90, 91--- Kaleetan	Poor: slope.	Probable---	Probable---	Poor: small stones, area reclaim, slope.
92--- Kaleetan	Fair: thin layer, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
93--- Kaleetan	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
94--- Kaleetan	Fair: slope.	Probable---	Probable---	Poor: small stones, area reclaim, slope.
95--- Kaleetan	Poor: slope.	Probable---	Probable---	Poor: small stones, area reclaim, slope.
96--- Kanaskat	Fair: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
97--- Kanaskat	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
98--- Kanaskat	Fair: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
99--- Kanaskat	Poor: slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
100--Kapowsin	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
101--Kapowsin	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
102--Kapowsin	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
103--Kindy	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
104--Kindy	Fair: thin layer, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
105--Kindy	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
106--Klaber	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
107*:				
Klaber	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Cinebar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
108--Klapatche	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, slope.
109--Klapatche	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, slope.
110*:				
Klapatche	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, slope.
Rock outcrop.				
111, 112--Klaus	Poor: thin layer.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
113---------- Klaus	Poor: thin layer, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
114---------- Klaus	Poor: thin layer.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones.
115---------- Klaus	Poor: thin layer, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
116---------- Larrupin	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
117---------- Larrupin	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
118---------- Larrupin	Fair: thin layer, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
119---------- Lemolo	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
120---------- Littlejohn	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
121, 122---------- Littlejohn	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
123---------- Littlejohn	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
124, 125---------- Littlejohn	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
126*: Littlejohn----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
127---------- Lynnwood	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
128--- Marblemount	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
129--- Marblemount	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
130--- Marblemount	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
131*: Marblemount--- Rock outcrop.	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
132--- Mashel	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
133--- Mashel	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
134--- Melakwa	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
135, 136, 137--- Melakwa	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
138*: Melakwa--- Rock outcrop.	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
139--- Mowich	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, thin layer.
140--- Mukilteo	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
141--- Nagrom	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
142--- Nagrom	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
143 Nagrom	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
144 Nagrom	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
145*: Nagrom	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
146 Nargar	Good	Probable	Probable	Poor: small stones, area reclaim.
147 Nargar	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
148*: Nargar	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
Pastik	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
149 National	Good	Probable	Probable	Poor: too sandy, small stones.
150 Neilton	Fair: large stones.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
151 Nimue	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
152, 153 Nimue	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
154 Nimue	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
155 Nimue	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
156*:				
Nimue	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
Rock outcrop.				
157--- Nooksack	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
158--- Norma	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
159--- Oakes	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
160--- Oakes	Fair: thin layer, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
161--- Oakes	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
162--- Ogarty	Poor: depth to rock.	Improbable: small stones.	Probable	Poor: small stones, slope.
163--- Ogarty	Poor: depth to rock, slope.	Improbable: small stones.	Probable	Poor: small stones, slope.
164*:				
Ogarty	Poor: depth to rock, slope.	Improbable: small stones.	Probable	Poor: small stones, slope.
Rock outcrop.				
165, 166--- Ohop	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
167--- Olomount	Poor: depth to rock.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, slope.
168--- Olomount	Poor: depth to rock, slope.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
169*:				
Olomount	Poor: depth to rock, slope.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, slope.
Rock outcrop.				
170--Oridia	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
171*:				
Orthents	Poor: depth to rock, large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: small stones, slope.
Humods	Poor: depth to rock, large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: small stones, slope.
172--Ovall	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
173--Ovall	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
174--Pastik	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
175, 176--Persis	Good	Probable	Improbable: too sandy.	Poor: small stones.
177--Pheeney	Poor: depth to rock.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
178--Pheeney	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
179--Pheeney	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
180--Pheeney	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
181*:				
Pheeney	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
182--Philippa	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
183--Philippa	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
184--Pierking	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
185*:				
Pierking	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
Borohemists	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
186*:				
Pierking	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
Mowich	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, thin layer.
187--Pilchuck	Fair: wetness.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim.
188--Pitcher	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
189, 190--Pitcher	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
191--Pitcher	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
192, 193--Pitcher	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
194*: Pitcher Rock outcrop.	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
195*: Pits	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
196: Playco	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
197, 198: Playco	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
199: Playco	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
200: Playco	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
201*: Playco Rock outcrop.	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
202: Puget	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
203: Ragnar	Good	Probable	Improbable: too sandy.	Fair: small stones, thin layer, slope.
204: Ragnar	Fair: slope.	Probable	Improbable: too sandy.	Poor: slope.
205*: Ragnar	Good	Probable	Improbable: too sandy.	Fair: small stones, thin layer, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
205*:				
Lynnwood	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones, slope.
206*:				
Ragnar	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
Lynnwood	Poor: slope.	Probable	Improbable: too sandy.	Poor: slope.
207 Reggad	Poor: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: large stones, area reclaim, slope.
208*:				
Reggad	Poor: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: large stones, area reclaim, slope.
Haywire	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
209*:				
Reggad	Poor: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: large stones, area reclaim, slope.
Klapatche	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, slope.
Rock outcrop.				
210*:				
Reggad	Poor: large stones, slope.	Improbable: large stones.	Improbable: large stones.	Poor: large stones, area reclaim, slope.
Serene	Poor: depth to rock, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, slope.
211 Reichel	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
212---------- Reichel	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
213---------- Reichel	Fair: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
214---------- Reichel	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
215*---------- Riverwash	Poor: wetness.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
216---------- Rober	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
217---------- Rober	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
218*. Rock outcrop				
219*: Rock outcrop.				
Cattcreek----------	Poor: slope.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
220*: Rock outcrop.				
Cayuse----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
221*: Rock outcrop.				
Haywire----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
222*: Rock outcrop.				
Rubble land----------	Poor: large stones, slope.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
222*:				
Haywire	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
223*:				
Rock outcrop.				
Rubble land	Poor: large stones, slope.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: small stones, area reclaim, slope.
Serene	Poor: depth to rock, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, slope.
224*	Poor:	Improbable:	Improbable:	Poor:
Rubble land	large stones, slope.	small stones, large stones.	large stones.	small stones, area reclaim, slope.
225	Poor:	Improbable:	Improbable:	Fair:
Rugles	low strength.	excess fines.	excess fines.	too clayey, small stones.
226	Good	Improbable:	Improbable:	Good.
Salal		excess fines.	excess fines.	
227	Good	Probable	Probable	Fair:
Sauk				small stones.
228, 229, 230	Poor:	Improbable:	Improbable:	Poor:
Scamman	shrink-swell, low strength, wetness.	excess fines.	excess fines.	too clayey, small stones, wetness.
231	Poor:	Improbable:	Improbable:	Poor:
Seattle	wetness.	excess humus.	excess humus.	excess humus, wetness.
232	Poor:	Improbable:	Improbable:	Poor:
Serene	depth to rock.	large stones.	large stones.	too sandy, small stones, slope.
233	Poor:	Improbable:	Improbable:	Poor:
Serene	depth to rock, slope.	large stones.	large stones.	too sandy, small stones, slope.
234*:				
Serene	Poor: depth to rock, slope.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
235---------- Shalcar	Poor: wetness.	Probable----------	Probable----------	Poor: excess humus, wetness.
236---------- Si	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
237---------- Skykomish	Fair: slope.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
238---------- Skykomish	Poor: slope.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
239---------- Skykomish	Fair: slope.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
240---------- Skykomish	Fair: large stones, slope.	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
241, 242---------- Snoqualmie	Fair: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
243---------- Spukwush	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
244---------- Stahl	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
245---------- Stahl	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
246---------- Stahl	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
247---------- Sulsavar	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
248---------- Sultan	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
249---------- Teneriffe	Fair: slope.	Probable----------	Probable----------	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
250--- Teneriffe	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
251, 252--- Teneriffe	Fair: depth to rock, thin layer, slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
253--- Teneriffe	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
254, 255--- Tokul	Fair: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
256--- Tokul	Fair: thin layer, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
257--- Tokul	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
258*, 259*: Tokul---	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Pastik---	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
260--- Treen	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
261--- Tukwila	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
262--- Tusip	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
263--- Tusip	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
264--- Typic Haplorthods	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
265, 266--- Typic Udifluvents	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, small stones.
267--- Udifluvents	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
268--- Vailton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
269--- Vailton	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
270--- Voight	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
271--- Voight	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
272--- Voight	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
273--- Welcome	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
274--- Welcome	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
275--- Wilkeson	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
276--- Wilkeson	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
277--- Wilkeson	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
278--- Winston	Good	Probable	Probable	Poor: small stones, area reclaim.
279, 280--- Winston	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
281---------- Woodinville	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
282---------- Zynbar	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
283---------- Zynbar	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
284---------- Zynbar	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1, 2--- Alderwood	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, large stones, wetness.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
3--- Alkiridge	Severe: slope.	Moderate: thin layer, seepage, wetness.	Severe: no water.	Cemented pan, slope.	Slope, wetness, soil blowing.	Slope, cemented pan, wetness.	Slope, cemented pan.
4, 5, 6--- Altapeak	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
7*: Altapeak---	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
Rock outcrop.							
8--- Andic Cryumbrepts	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
9--- Arents	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, too sandy.	Large stones, droughty.
10--- Barneston	Severe: seepage.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
11, 12--- Barneston	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
13--- Barneston	Severe: seepage.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
14, 15, 16-------- Barneston	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
17, 18, 19-------- Beausite	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.	Slope, droughty, depth to rock.
20---------- Belfast	Moderate: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Flooding--------	Erodes easily, too sandy.	Erodes easily.
21, 22---------- Bellicum	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
23, 24---------- Blethen	Severe: slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
25---------- Borohemists	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding--------	Ponding--------	Wetness.
26---------- Bromo	Severe: seepage, slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
27, 28---------- Cattcreek	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope----------	Slope, droughty.
29, 30---------- Cattcreek	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
31---------- Cattcreek	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
32, 33---------- Cayuse	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
34---------- Chinkmin	Moderate: seepage, cemented pan, slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, large stones, wetness.	Large stones, cemented pan.	Large stones, droughty.
35, 36---------- Chinkmin	Severe: slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, large stones, wetness.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
37---------- Chinkmin	Moderate: seepage, cemented pan, slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, large stones, wetness.	Large stones, cemented pan.	Large stones, droughty.
38---------- Chinkmin	Severe: slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, large stones, wetness.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
39, 40---------- Christoff	Severe: slope.	Moderate: wetness.	Severe: no water.	Frost action, slope.	Slope, wetness, soil blowing.	Slope, erodes easily, wetness.	Slope, erodes easily.
41, 42, 43-------- Chuckanut	Severe: slope.	Moderate: thin layer, seepage.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
44, 45, 46-------- Cinebar	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
47, 48---------- Cotteral	Severe: seepage, slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Droughty, slope.	Slope----------	Slope, droughty.
49---------- Crinker	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
50---------- Cryofluvents	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
51---------- Cryohemists	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
52---------- Dobbs	Severe: slope.	Severe: seepage.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Slope, large stones, cemented pan.	Large stones, slope, cemented pan.
53---------- Edgewick	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, flooding.	Erodes easily, too sandy.	Erodes easily, droughty.
54, 55---------- Elwell	Severe: slope.	Severe: piping.	Severe: no water.	Cemented pan, frost action, slope.	Slope, wetness, cemented pan.	Slope, cemented pan, wetness.	Slope, cemented pan.
56, 57, 58, 59---- Ethania	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, too sandy.	Large stones, slope, droughty.
60---------- Ethania	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
61, 62---------- Foss	Severe: slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Large stones, slope.	Slope, large stones.	Large stones, slope.
63, 64, 65-------- Gallup	Severe: slope.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
66, 67, 68-------- Getchell	Severe: slope.	Severe: piping.	Severe: no water.	Cemented pan, frost action, slope.	Slope, wetness, cemented pan.	Slope, cemented pan, wetness.	Slope, cemented pan.
69---------- Greenwater	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
70---------- Grotto	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
71---------- Hartnit	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
72, 73, 74, 75---- Haywire	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
76, 77, 78-------- Hinker	Severe: slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
79---------- Humaquepts	Moderate: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Frost action, cutbanks cave.	Wetness, droughty.	Erodes easily, wetness, too sandy.	Wetness, erodes easily, droughty.
80, 81, 82-------- Index	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
83*: Index----------	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
Rock outcrop.							
84, 85---------- Jonas	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope, large stones.	Large stones, slope.
86, 87, 88-------- Jonas	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
89, 90, 91-------- Kaleetan	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
92, 93---------- Kaleetan	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, large stones, too sandy.	Large stones, slope, droughty.
94, 95---------- Kaleetan	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
96, 97, 98, 99---- Kanaskat	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
100, 101, 102----- Kapowsin	Severe: slope.	Severe: thin layer.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Slope, cemented pan, wetness.	Wetness, slope, cemented pan.
103---------- Kindy	Moderate: seepage, cemented pan, slope.	Severe: seepage.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Large stones, cemented pan.	Large stones, cemented pan.
104, 105---------- Kindy	Severe: slope.	Severe: seepage.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Slope, large stones, cemented pan.	Large stones, slope, cemented pan.
106---------- Klaber	Moderate: slope.	Severe: ponding.	Severe: no water.	Ponding, percs slowly, slope.	Ponding, percs slowly, slope.	Ponding, percs slowly.	Wetness, percs slowly.
107*: Klaber----------	Moderate: slope.	Severe: ponding.	Severe: no water.	Ponding, percs slowly, slope.	Ponding, percs slowly, slope.	Ponding, percs slowly.	Wetness, percs slowly.
Cinebar----------	Moderate: seepage, slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
108, 109---------- Klapatche	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
110*: Klapatche--------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
111---------- Klaus	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, cemented pan.	Large stones, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
112, 113---------- Klaus	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
114---------- Klaus	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, cemented pan.	Large stones, droughty.
115---------- Klaus	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
116, 117---------- Larrupin	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
118---------- Larrupin	Severe: slope.	Severe: piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, fast intake.	Slope, large stones, soil blowing.	Large stones, slope.
119---------- Lemolo	Moderate: slope.	Severe: wetness.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Large stones, erodes easily, wetness.	Large stones, wetness, erodes easily.
120, 121, 122, 123, 124, 125---- Littlejohn	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
126*: Littlejohn------- Rock outcrop.	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
127---------- Lynnwood	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
128, 129---------- Marblemount	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
130---------- Marblemount	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, depth to rock, too sandy.	Slope, droughty, depth to rock.
131*: Marblemount------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
132, 133---------- Mashel	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
134, 135, 136, 137---------- Melakwa	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, soil blowing.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
138*: Melakwa----------	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, soil blowing.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
Rock outcrop.							
139---------- Mowich	Moderate: seepage, slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Wetness, percs slowly.
140---------- Mukilteo	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides.	Ponding--------	Ponding--------	Wetness.
141, 142---------- Nagrom	Severe: slope.	Moderate: thin layer, seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, depth to rock, soil blowing.	Slope, depth to rock.
143, 144---------- Nagrom	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
145*: Nagrom----------	Severe: slope.	Moderate: thin layer, seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, depth to rock, soil blowing.	Slope, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
145*: Rock outcrop.							
146--- Nargar	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
147--- Nargar	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, too sandy, soil blowing.	Slope.
148*: Nargar---	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, too sandy, soil blowing.	Slope.
Pastik---	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
149--- National	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope---	Favorable---	Favorable.
150--- Neilton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
151, 152, 153, 154, 155--- Nimue	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
156*: Nimue---	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
Rock outcrop.							
157--- Nooksack	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
158--- Norma	Severe: seepage.	Severe: ponding.	Moderate: slow refill.	Ponding---	Ponding---	Erodes easily, ponding.	Wetness, erodes easily.
159, 160, 161--- Oakes	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
162, 163---------- Ogarty	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
164*: Ogarty---------- Rock outcrop.	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
165, 166---------- Ohop	Moderate: seepage, slope.	Severe: seepage.	Severe: no water.	Percs slowly, large stones, slope.	Slope, wetness, droughty.	Large stones, wetness.	Large stones, droughty.
167, 168---------- Olomount	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
169*: Olomount--------- Rock outcrop.	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
170---------- Oridia	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
171*: Orthents--------- Humods----------	Severe: seepage, slope. Severe: seepage, slope.	Severe: seepage, large stones. Severe: seepage, large stones.	Severe: no water. Severe: no water.	Deep to water Deep to water	Slope, large stones, droughty. Slope, large stones, droughty.	Slope, large stones, depth to rock. Slope, large stones, depth to rock.	Large stones, slope, droughty. Large stones, slope, droughty.
172, 173---------- Ovall	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
174---------- Pastik	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
175, 176---------- Persis	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
177, 178---------- Pheeney	Severe: slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
179, 180---------- Pheeney	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
181*: Pheeney----------	Severe: slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
Rock outcrop.							
182, 183---------- Philippa	Severe: slope.	Severe: seepage.	Severe: no water.	Cemented pan, large stones, slope.	Slope, wetness, soil blowing.	Slope, cemented pan, wetness.	Slope, cemented pan.
184---------- Pierking	Slight---------	Severe: seepage, wetness.	Severe: slow refill, cutbanks cave.	Frost action, cutbanks cave.	Wetness, droughty.	Wetness, too sandy.	Wetness, droughty, rooting depth.
185*: Pierking---------	Slight---------	Severe: seepage, wetness.	Severe: slow refill, cutbanks cave.	Frost action, cutbanks cave.	Wetness, droughty.	Wetness, too sandy.	Wetness, droughty, rooting depth.
Borohemists------	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding--------	Ponding--------	Wetness.
186*: Pierking---------	Moderate: slope.	Severe: seepage, wetness.	Severe: slow refill, cutbanks cave.	Frost action, slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy.	Wetness, droughty, rooting depth.
Mowich----------	Severe: slope.	Severe: hard to pack.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, slope, percs slowly.
187---------- Pilchuck	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty.	Wetness, too sandy.	Droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
188, 189, 190, 191, 192, 193---- Pitcher	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
194*: Pitcher----------	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope, droughty.
Rock outcrop.							
195*---------- Pits	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Large stones, too sandy.	Large stones, droughty.
196, 197, 198----- Playco	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope.
199, 200---------- Playco	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
201*: Playco----------	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Slope, large stones, soil blowing.	Large stones, slope.
Rock outcrop.							
202---------- Puget	Slight---------	Severe: piping, wetness.	Severe: slow refill.	Flooding-------	Wetness, percs slowly, flooding.	Wetness--------	Wetness.
203, 204---------- Ragnar	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
205*, 206*: Ragnar----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
Lynnwood---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
207--- Reggad	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
208*:							
Reggad---	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
Haywire---	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
209*:							
Reggad---	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
Klapatche---	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
210*:							
Reggad---	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
Serene---	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
211, 212, 213, 214--- Reichel	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope---	Slope---	Slope.
215*--- Riverwash	Severe: seepage.	Severe: wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Large stones, wetness, too sandy.	Large stones, wetness, droughty.
216, 217--- Rober	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
218*. Rock outcrop							
219*: Rock outcrop.							
Cattcreek	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope	Slope, droughty.
220*: Rock outcrop.							
Cayuse	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
221*: Rock outcrop.							
Haywire	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
222*: Rock outcrop.							
Rubble land	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
Haywire	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
223*: Rock outcrop.							
Rubble land	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
Serene	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
224*--- Rubble land	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
225--- Rugles	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope---	Favorable---	Favorable.
226--- Salal	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
227--- Sauk	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope---	Favorable---	Favorable.
228, 229, 230--- Scamman	Severe: slope.	Severe: wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Wetness, slope, percs slowly.
231--- Seattle	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides.	Ponding---	Ponding---	Wetness.
232, 233--- Serene	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
234*: Serene---	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
235--- Shalcar	Severe: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding---	Erodes easily, ponding.	Wetness, erodes easily.
236--- Si	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Flooding---	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
237, 238--- Skykomish	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
239---------- Skykomish	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
240---------- Skykomish	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
241, 242---------- Snoqualmie	Severe: seepage.	Severe: seepage, large stones.	Severe: cutbanks cave.	Deep to water	Slope, large stones, droughty.	Large stones, too sandy.	Large stones, droughty.
243---------- Spukwush	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Slope, erodes easily, soil blowing.	Slope, erodes easily.
244, 245, 246----- Stahl	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
247---------- Sulsavar	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
248---------- Sultan	Moderate: seepage.	Severe: piping.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
249, 250---------- Teneriffe	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
251, 252, 253----- Teneriffe	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope.	Slope, large stones, too sandy.	Large stones, slope, droughty.
254---------- Tokul	Moderate: seepage, cemented pan, slope.	Severe: thin layer.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Cemented pan, wetness.	Cemented pan.
255, 256, 257----- Tokul	Severe: slope.	Severe: thin layer.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Slope, cemented pan, wetness.	Slope, cemented pan.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
258*, 259*:							
Tokul	Severe: slope.	Severe: thin layer.	Severe: no water.	Cemented pan, slope.	Slope, wetness, cemented pan.	Slope, cemented pan, wetness.	Slope, cemented pan.
Pastik	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
260---------- Treen	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
261---------- Tukwila	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides.	Ponding	Ponding	Wetness.
262, 263---------- Tusip	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
264---------- Typic Haplorthods	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, cemented pan.	Slope, cemented pan.	Slope, droughty, cemented pan.
265, 266---------- Typic Udifluvents	Moderate: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, erodes easily, flooding.	Erodes easily, too sandy.	Erodes easily, droughty.
267---------- Udifluvents	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, slope, flooding.	Large stones	Large stones, droughty.
268, 269---------- Vailton	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope	Slope.
270, 271, 272----- Voight	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope	Slope	Slope.
273, 274---------- Welcome	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
275, 276, 277----- Wilkeson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
278---------- Winston	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Too sandy------	Favorable.
279, 280---------- Winston	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope----------	Slope, too sandy.	Slope.
281---------- Woodinville	Slight---------	Severe: piping, wetness.	Severe: slow refill.	Subsides-------	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
282---------- Zynbar	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
283---------- Zynbar	Severe: slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope----------	Slope.
284---------- Zynbar	Moderate: seepage, slope.	Severe: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
1, 2---------- Alderwood	0-6	Gravelly loam	GM, SM	A-4, A-2	---	0-5	60-80	50-75	40-60	30-50	15-25	NP-5
	6-33	Very gravelly loam, very gravelly sandy loam, very cobbly sandy loam.	GM, SM	A-1, A-2	---	0-35	40-70	35-60	20-50	10-35	15-25	NP-5
	33	Cemented material.	---	---	---	---	---	---	---	---	---	---
3---------- Alkiridge	0-7	Sandy loam----	SM	A-2, A-4	0	0	95-100	85-100	50-70	25-40	15-25	NP-5
	7-18	Gravelly sandy loam, very gravelly sandy loam.	SM	A-2, A-1	---	0-15	65-80	55-70	30-50	20-35	15-25	NP-5
	18-37	Very gravelly loam.	GM	A-2	---	5-15	45-60	35-50	30-40	25-35	30-40	NP-10
	37	Cemented material.	---	---	---	---	---	---	---	---	---	---
4, 5, 6------- Altapeak	0-6	Gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	60-85	50-75	35-60	20-35	15-20	NP-5
	6-16	Very gravelly sandy loam, very gravelly loam, gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	0	0-10	45-75	35-65	25-50	15-35	15-30	NP-10
	16-24	Very gravelly sandy loam, very cobbly loamy sand, very cobbly sandy loam.	GM, SM	A-1	0	5-30	40-60	30-50	20-35	10-20	15-20	NP-5
	24-50	Extremely cobbly loamy sand, extremely gravelly coarse sand, very gravelly loamy coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0	10-40	35-65	25-55	15-25	0-10	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7*:												
Altapeak-----	0-6	Gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	60-85	50-75	35-60	20-35	15-20	NP-5
	6-16	Very gravelly sandy loam, very gravelly loam, gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	0	0-10	45-75	35-65	25-50	15-35	15-30	NP-10
	16-24	Very gravelly sandy loam, very cobbly loamy sand, very cobbly sandy loam.	GM, SM	A-1	0	5-30	40-60	30-50	20-35	10-20	15-20	NP-5
	24-50	Extremely cobbly loamy sand, extremely gravelly coarse sand, very gravelly loamy coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0	10-40	35-65	25-55	15-25	0-10	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
8----------	0-5	Very gravelly sandy loam.	GM, SM	A-1, A-2	---	10-25	40-70	30-60	20-45	15-30	15-25	NP-5
Andic Cryumbrepts	5-16	Very cobbly sandy loam, very gravelly sandy loam.	SM	A-1, A-2, A-4	---	15-40	60-80	45-55	35-50	20-40	15-25	NP-5
	16-44	Extremely stony sandy loam, extremely cobbly loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	30-65	50-65	15-35	10-30	10-30	15-25	NP-5
	44	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
9----------	0-35	Gravelly sandy loam.	GM, SM	A-2	0	0	60-80	50-75	40-60	25-35	15-25	NP-5
Arents	35-60	Stratified extremely gravelly coarse sand to gravelly sandy loam.	GP, SP, GP-GM, SP-SM	A-1	---	5-25	45-60	25-55	20-35	0-15	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
10, 11, 12---- Barneston	0-9	Gravelly coarse sandy loam.	SM	A-1, A-2	---	0-15	75-85	60-75	40-55	20-30	25-35	NP-5
	9-14	Very gravelly loam, very gravelly sandy loam, extremely cobbly sandy loam.	GM, GP-GM	A-1, A-2	---	5-60	25-60	20-50	10-40	5-30	20-30	NP-5
	14-60	Very gravelly sand, extremely gravelly loamy sand, extremely gravelly sand.	GP, GP-GM	A-1	---	0-25	30-40	20-35	5-25	0-10	---	NP
13, 14, 15, 16---------- Barneston	0-9	Gravelly sandy loam.	SM	A-1, A-2	---	0-15	75-85	60-75	40-55	20-30	25-35	NP-5
	9-17	Very gravelly loam, very gravelly sandy loam, extremely cobbly sandy loam.	GM, GP-GM	A-1, A-2	---	5-60	25-60	20-50	10-40	5-30	20-30	NP-5
	17-60	Very gravelly sand, extremely gravelly loamy sand, extremely gravelly sand.	GP, GP-GM	A-1	---	0-25	30-40	20-35	5-25	0-10	---	NP
17, 18, 19---- Beausite	0-5	Gravelly loam	GM-GC	A-4	0	0	60-70	50-70	40-60	35-50	20-30	5-10
	5-11	Very gravelly sandy loam, very gravelly loam.	SM	A-1, A-2	0	0	60-70	40-50	30-40	15-30	15-25	NP-5
	11-36	Very gravelly sandy loam, extremely gravelly sandy loam.	SM, GM, GP-GM, SP-SM	A-1	---	0-15	45-65	15-50	10-30	5-20	15-25	NP-5
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
20---------- Belfast	0-7	Silt loam-----	ML	A-4	0	0	100	100	80-90	70-80	30-40	NP-5
	7-38	Silt loam, loam, fine sandy loam.	ML	A-4	0	0	100	100	75-85	55-75	30-40	NP-5
	38-60	Stratified silt loam to loamy sand.	ML	A-4	---	0-5	90-100	85-100	70-80	50-60	25-35	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
21, 22-------- Bellicum	0-6	Very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-100	25-50	15-40	5-15	---	NP
	6-21	Very gravelly sand, very cindery loamy sand, extremely cindery loamy sand.	SP, SP-SM	A-1	0	0	75-100	20-50	10-30	0-15	---	NP
	21-39	Very gravelly fine sandy loam, very cobbly sandy loam.	SM	A-1, A-2	---	25-40	60-75	40-65	25-50	10-30	25-45	NP-10
	39-52	Extremely cobbly sandy loam.	GM, GP-GM	A-1, A-2	---	50-65	35-50	10-45	5-30	5-20	25-45	NP-10
	52	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
23, 24-------- Blethen	0-5	Gravelly loam	GM, SM	A-4, A-2	---	0-10	65-80	55-70	40-65	30-50	30-40	NP-5
	5-24	Very gravelly sandy loam, very cobbly loam, very gravelly loam.	GM, SM	A-1, A-2, A-4	---	10-40	55-80	45-65	35-55	20-50	20-30	NP-5
	24-42	Very cobbly silt loam, very gravelly loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	10-40	40-60	25-50	20-35	10-35	20-30	NP-5
	42-60	Very cobbly loam, extremely gravelly sandy loam, extremely gravelly loamy sand.	GM	A-1, A-2	---	10-40	30-60	20-50	15-45	10-35	15-25	NP-5
25---------- Borohemists	0-4	Mucky-peat----	PT	A-8	0	0	---	---	---	---	---	---
	4-30	Hemic material	PT	A-8	0	0	---	---	---	---	---	---
	30-60	Variable------	---	---	---	---	---	---	---	---	---	---
26---------- Bromo	0-4	Very cindery sandy loam.	SM	A-2, A-1	0	0	75-100	30-50	20-50	10-30	---	NP
	4-32	Very cindery sand, very cindery loamy sand, cindery sand, very loamy sand.	SP, SP-SM	A-1	0	0	75-100	15-30	10-25	0-10	---	NP
	32-60	Silt loam, gravelly loam, sandy loam.	GM, ML, SM, MH	A-5, A-7	---	0-10	65-95	60-90	55-80	35-65	40-60	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
27, 28-------- Cattcreek	0-7	Very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-90	25-50	15-30	5-15	---	NP
	7-11	Very cindery sand, very cindery loamy sand.	SP-SM, SP	A-1	0	0	75-90	25-50	15-35	0-10	---	NP
	11-21	Extremely cindery sand, very cindery sand.	SP	A-1	0	0	70-90	10-35	5-20	0-5	---	NP
	21-60	Very gravelly sandy loam, extremely gravelly loam.	GM, GP-GM	A-1, A-2	---	10-35	20-35	10-35	10-20	5-20	25-45	NP-10
29, 30-------- Cattcreek	0-7	Very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-90	25-50	15-30	5-15	---	NP
	7-31	Very cindery sand, extremely cindery coarse sand.	SP-SM	A-1	0	0	75-90	20-50	10-30	5-10	---	NP
	31-60	Extremely gravelly sandy loam, very gravelly loam, very gravelly sandy loam.	GM, GP-GM	A-1, A-2	---	20-35	20-35	10-35	10-20	5-20	25-45	NP-10
31---------- Cattcreek	0-8	Very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-100	25-50	15-30	5-20	---	NP
	8-17	Extremely cindery sand, very cindery loamy sand, very cindery sand.	SP, SP-SM, SM	A-1	0	0	75-100	20-50	5-30	0-15	---	NP
	17-50	Extremely gravelly sandy loam, very gravelly silt loam, very gravelly loam.	GM	A-1, A-2	---	25-55	25-50	20-45	20-40	15-30	40-60	NP-15
	50	Cemented material.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
32, 33-------- Cayuse	0-13	Sandy loam----	SM	A-2, A-4	0	0	85-100	80-100	40-60	30-50	25-30	NP-5
	13-30	Loam, sandy loam.	SM, ML	A-2, A-4	0	0	85-100	75-100	40-80	30-60	25-35	NP-5
	30-36	Gravelly loam, gravelly sandy loam.	SM	A-2, A-4	---	0-10	70-85	55-75	40-55	25-40	30-40	NP-10
	36-60	Very gravelly loam, gravelly loam, very gravelly sandy loam.	SM, GM	A-1, A-2	---	0-10	50-70	35-55	25-45	15-35	30-40	NP-10
34, 35, 36, 37, 38------- Chinkmin	0-8	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	55-70	30-40	15-20	NP-5
	8-15	Gravelly loam, gravelly silt loam, very gravelly loam.	SC-SM	A-2, A-4	---	0-15	70-85	40-70	35-60	25-50	20-25	5-10
	15-22	Very cobbly loam, very gravelly loam, very gravelly sandy loam.	SM, GM	A-1, A-2	---	20-50	50-70	45-60	30-50	20-35	15-20	NP-5
	22-32	Very cobbly loam, extremely gravelly loam, very gravelly sandy loam.	SM, GM	A-1, A-2	---	0-40	50-70	25-60	25-50	10-35	15-20	NP-5
	32	Cemented material.	---	---	---	---	---	---	---	---	---	---
39, 40-------- Christoff	0-12	Sandy loam----	SM	A-2, A-1	0	0	95-100	75-100	45-65	20-35	20-30	NP-5
	12-26	Sandy loam, gravelly sandy loam, loam.	SM, ML	A-6	0	0	95-100	70-95	65-85	45-65	35-40	10-15
	26-60	Clay loam, loam.	CL, SC	A-6	0	0	95-100	75-95	65-85	45-65	35-40	15-20
41, 42, 43---- Chuckanut	0-8	Loam----------	ML, SM	A-4	---	0-5	85-100	75-90	55-70	40-60	25-35	NP-5
	8-35	Gravelly loam, gravelly sandy loam.	SM	A-1, A-2, A-4	---	0-5	65-85	55-75	35-60	20-40	25-35	NP-5
	35-50	Gravelly loam, gravelly sandy loam.	SM	A-2, A-4	---	0-5	70-80	60-75	40-60	25-40	25-35	NP-5
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
44, 45, 46---- Cinebar	0-10	Silt loam-----	ML, MH	A-4, A-5, A-6, A-7	---	0-5	85-100	80-100	75-100	70-90	35-65	NP-20
	10-54	Silt loam-----	ML, MH	A-5, A-7	---	0-5	85-100	80-100	75-100	70-90	40-60	5-20
	54-60	Silt loam, loam.	ML, MH	A-5, A-7	---	0-5	85-100	80-100	75-100	65-90	40-60	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
47---------- Cotteral	0-9	Very cindery sandy loam.	SM	A-1	0	0	75-100	25-50	15-35	10-20	---	NP
	9-32	Very cindery sandy loam, very cindery sand, very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-100	25-50	15-35	5-15	---	NP
	32-60	Silt loam, sandy loam, loam.	SM, ML, MH	A-4, A-2, A-7, A-5	---	0-5	90-100	85-100	55-95	30-75	35-60	NP-20
48---------- Cotteral	0-3	Very cindery sandy loam.	SM	A-1	0	0	75-100	25-50	15-35	10-20	---	NP
	3-14	Very cindery sandy loam, very cindery sand, very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-100	25-50	15-35	5-15	---	NP
	14-60	Silt loam, sandy loam, loam.	SM, ML, MH	A-4, A-2, A-7, A-5	---	0-5	90-100	85-100	55-95	30-75	35-60	NP-20
49---------- Crinker	0-5	Very channery loam.	GM, SM	A-1, A-2, A-4, A-5	---	0-5	50-70	30-50	25-45	20-40	35-45	NP-5
	5-32	Very channery silt loam, extremely channery loam, very channery loam.	GM-GC, GM	A-2, A-1	---	0-15	35-50	25-40	20-30	15-30	20-30	NP-10
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
50---------- Cryofluvents	0-5	Stony sandy loam.	SM	A-1, A-2, A-4	---	10-20	65-95	50-90	35-60	15-45	20-30	NP-5
	5-9	Gravelly loamy sand, very gravelly sandy loam, cobbly loam.	SM, GM	A-1, A-2, A-4	---	5-20	50-80	40-70	20-55	15-45	15-20	NP-5
	9-49	Gravelly loamy sand, very gravelly loamy sand, very gravelly fine sand.	SM, GM	A-1	---	5-30	50-80	40-70	20-50	10-25	---	NP
	49	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
51---------- Cryohemists	0-6	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
	6-28	Hemic material	PT	A-8	0	0	---	---	---	---	---	---
	28-60	Clay loam, gravelly sandy loam, gravelly loam.	SM, ML	A-2, A-4	0	0	70-95	60-90	45-70	25-60	20-35	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
52---------- Dobbs	0-10	Loam----------	ML, MH, OL, OH	A-5, A-7	0	0	90-95	85-90	65-85	50-65	45-65	5-20
	10-35	Gravelly loam, very gravelly sandy loam, very gravelly loam.	GM, SM	A-5, A-2, A-7	---	10-25	45-75	35-65	25-50	15-40	40-60	5-20
	35	Cemented material.	---	---	---	---	---	---	---	---	---	---
53---------- Edgewick	0-8	Silt loam-----	ML	A-4	0	0	90-100	85-100	70-80	50-60	15-25	NP-5
	8-20	Fine sandy loam, silt loam, loam.	SM	A-4, A-2	0	0	90-100	85-100	60-80	30-50	15-25	NP-5
	20-46	Fine sandy loam, loamy sand, sand.	SM	A-2	0	0	90-100	75-100	60-80	15-35	---	NP
	46-60	Very gravelly sand, very gravelly loamy sand.	SP-SM, GP-GM, GM, SM	A-1	0	0	50-70	25-50	20-40	5-15	---	NP
54, 55-------- Elwell	0-8	Silt loam-----	ML, OL	A-4	---	0-5	85-100	75-90	60-80	50-65	30-40	NP-10
	8-35	Silt loam, loam, gravelly silt loam.	ML, SM	A-4	---	0-5	75-100	50-90	50-80	40-65	30-40	NP-10
	35	Cemented material.	---	---	---	---	---	---	---	---	---	---
56, 57-------- Ethania	0-7	Very cindery loamy sand.	SM	A-1	---	0-5	90-100	35-50	25-30	10-15	---	NP
	7-31	Very cindery loamy sand.	SM	A-1	---	0-5	90-100	35-50	25-30	10-15	---	NP
	31-60	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	---	10-25	50-65	40-55	30-45	15-30	30-45	NP-10
58, 59-------- Ethania	0-6	Very cindery loamy sand.	SM	A-1	---	0-5	90-100	35-50	25-30	10-15	---	NP
	6-14	Very cindery loamy sand.	SM	A-1	---	0-5	90-100	35-50	25-30	10-15	---	NP
	14-36	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	---	10-25	50-65	40-55	30-45	15-30	30-45	NP-10
	36-60	Very gravelly sandy loam, extremely cobbly loamy sand, very gravelly loamy sand.	GM	A-1, A-2	---	25-65	45-60	40-45	20-35	10-20	25-40	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
60--Ethania	0-8	Very cindery loamy sand.	SM	A-1	---	0-5	90-100	35-50	15-30	10-15	---	NP
	8-15	Very cindery loamy sand, very cindery coarse sand.	SM, SP-SM	A-1	---	0-5	90-100	35-50	15-30	5-15	---	NP
	15-41	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	---	10-25	50-65	40-55	30-45	15-30	30-45	NP-10
	41	Cemented material.	---	---	---	---	---	---	---	---	---	---
61, 62--Foss	0-4	Stony sandy loam.	SM	A-2	---	10-20	90-95	80-90	50-60	25-35	15-20	NP-5
	4-16	Gravelly sandy loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-5	60-75	50-75	30-65	15-50	30-40	5-10
	16-60	Very gravelly silt loam, very gravelly loam, very cobbly silt loam.	SM, GM	A-2, A-4	---	10-50	60-80	35-55	30-50	25-50	30-40	5-10
63, 64--Gallup	0-5	Loam	ML, OL	A-4, A-5	0	0	90-100	80-100	75-95	70-80	35-45	NP-5
	5-14	Silt loam, loam, gravelly loam.	ML	A-4	---	0-10	80-95	70-90	65-90	50-70	25-35	NP-5
	14-41	Gravelly silt loam, gravelly loam, loam.	SM, GM	A-4	---	0-15	65-90	55-80	45-60	35-50	25-35	NP-5
	41-60	Gravelly silt loam, gravelly loam, gravelly loam, gravelly sandy loam.	SM, GM	A-1, A-2, A-4	---	0-5	60-85	50-75	40-60	20-45	20-30	NP-5
65--Gallup	0-7	Loam	ML, OL	A-4, A-5	0	0	90-100	80-100	75-95	70-80	35-45	NP-5
	7-15	Silt loam, loam, gravelly loam.	ML	A-4	---	0-10	80-95	70-90	65-90	50-70	25-35	NP-5
	15-36	Gravelly silt loam, gravelly loam, loam.	SM, GM	A-4	---	0-15	65-90	55-80	45-60	35-50	25-35	NP-5
	36-60	Gravelly silt loam, gravelly loam, gravelly loam, gravelly sandy loam.	SM, GM	A-1, A-2, A-4	---	0-5	60-85	50-75	40-60	20-45	20-30	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
66, 67, 68---- Getchell	0-7	Loam----------	ML, OL	A-4	---	0-5	90-100	85-95	70-90	55-80	30-40	NP-10
	7-19	Silt loam, loam, gravelly silt loam.	ML, GM, SM	A-4	---	0-5	65-100	50-95	40-85	35-80	30-40	NP-10
	19-30	Silt loam, sandy loam, gravelly loam.	SM, ML	A-2, A-4, A-1	---	0-5	65-100	50-95	40-85	20-80	30-40	NP-10
	30	Cemented material.	---	---	---	---	---	---	---	---	---	---
69---------- Greenwater	0-5	Loamy sand----	SM	A-2, A-1	0	0	90-100	75-100	40-65	10-25	---	NP
	5-17	Loamy sand, sand.	SM, SP-SM	A-2, A-1, A-3	0	0	90-100	75-100	40-65	5-25	---	NP
	17-51	Sand, coarse sand.	SM, SP-SM	A-2, A-1, A-3	0	0	90-100	75-100	40-60	5-15	---	NP
	51-60	Extremely gravelly sand, very gravelly coarse sand, very gravelly sand.	GP, GP-GM, SP-SM, SP	A-1	---	0-10	25-60	15-50	10-25	0-10	---	NP
70---------- Grotto	0-5	Gravelly loamy sand.	SM	A-1	---	0-5	65-85	55-75	30-40	10-20	---	NP
	5-19	Gravelly loamy sand, very gravelly loamy sand, very gravelly coarse sand.	SM, GM	A-1, A-2	---	0-5	50-80	35-70	30-60	10-20	---	NP
	19-36	Very gravelly loamy sand, very gravelly coarse sand, very gravelly sand.	SP, GP, GP-GM, SP-SM	A-1	---	0-5	40-70	30-50	15-30	0-10	---	NP
	36-60	Very gravelly sand, very gravelly coarse sand.	SP, SP-SM	A-1	---	10-25	65-80	35-55	10-30	0-10	---	NP
71---------- Hartnit	0-6	Silt loam-----	ML	A-4	---	0-10	90-100	80-90	65-80	50-65	30-40	NP-10
	6-20	Gravelly silt loam, gravelly loam, cobbly loam.	SM, GM, ML	A-2, A-4	---	0-30	65-85	60-75	45-70	30-60	30-40	NP-10
	20-31	Gravelly loam, very gravelly loam, very gravelly silt loam.	SM, GM, ML	A-2, A-4	---	0-15	60-85	40-75	35-70	25-60	30-40	NP-10
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
72, 73-------- Haywire	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-65	25-40	15-25	NP-5
	4-17	Loam, gravelly sandy loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-10	75-95	60-90	40-80	20-50	25-35	NP-5
	17-25	Very cobbly loam, very gravelly loam.	GM, SM	A-2, A-4	---	10-30	55-75	50-65	40-55	25-40	30-40	NP-5
	25-36	Extremely gravelly loam, very gravelly silt loam, extremely cobbly loam.	GM	A-1, A-2	---	15-55	30-60	20-50	15-40	15-35	30-40	NP-5
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
74, 75-------- Haywire	0-8	Loamy sand----	SM	A-1, A-2	0	0	90-100	85-100	40-60	15-25	---	NP
	8-14	Very cobbly loam, very gravelly loam.	GM, SM	A-2, A-4	---	10-30	55-75	50-65	40-55	25-40	30-40	NP-5
	14-30	Extremely gravelly loam, very gravelly silt loam, extremely cobbly loam.	GM	A-1, A-2	---	15-55	30-60	20-50	15-40	15-35	30-40	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
76, 77, 78---- Hinker	0-8	Gravelly sandy loam.	SM	A-2, A-1	---	0-5	70-85	60-75	40-55	20-35	20-30	NP-5
	8-17	Very channery silt loam, very cobbly loam, very channery loam.	GM	A-2, A-4	---	15-25	50-70	35-55	30-50	25-40	30-40	NP-10
	17-38	Very channery silt loam, very channery loam, extremely channery loam.	GM	A-2, A-4	---	25-55	45-75	45-70	30-40	25-40	25-35	NP-5
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
79---------- Humaquepts	0-5	Silt loam-----	ML, CL-ML	A-4	0	0	85-100	75-95	60-90	50-80	15-25	NP-10
	5-13	Sandy loam, silt loam, loam.	ML, SM, SC-SM, CL-ML	A-4, A-2	---	0-5	85-100	75-95	45-80	30-60	15-30	NP-10
	13-25	Gravelly sandy loam, loam, gravelly silty clay loam.	ML, CL, CL-ML, SM	A-4, A-2, A-6	---	0-10	75-95	60-90	40-85	25-80	15-40	NP-20
	25-60	Silty clay loam, gravelly sand, very gravelly loam.	ML, CL, CL-ML, SM	A-4, A-2, A-1, A-6	---	0-10	65-95	50-90	35-85	10-80	15-40	NP-20
80, 81, 82---- Index	0-7	Loamy sand----	SM	A-1, A-2	---	0-5	90-100	75-95	45-60	15-25	---	NP
	7-15	Very gravelly loamy sand, cobbly sand, very cobbly loamy sand.	GM, SM	A-1	---	25-45	50-85	45-80	30-45	10-20	---	NP
	15-23	Very gravelly loamy sand, very cobbly loamy sand, very cobbly sand.	GM, SM, SP-SM, GP-GM	A-1	---	20-45	50-65	45-60	30-40	5-15	---	NP
	23-57	Very cobbly sand, extremely cobbly sand, very gravelly sand.	SP, GP, SP-SM, GP-GM	A-1	---	25-60	45-60	35-55	25-35	0-10	---	NP
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
83*: Index--------	0-7	Loamy sand----	SM	A-1, A-2	---	0-5	90-100	75-95	45-60	15-25	---	NP
	7-15	Very gravelly loamy sand, cobbly sand, very cobbly loamy sand.	GM, SM	A-1	---	25-45	50-85	45-80	30-45	10-20	---	NP
	15-23	Very gravelly loamy sand, very cobbly loamy sand, very cobbly sand.	GM, SM, SP-SM, GP-GM	A-1	---	20-45	50-65	45-60	30-40	5-15	---	NP
	23-57	Very cobbly sand, extremely cobbly sand, very gravelly sand.	SP, GP, SP-SM, GP-GM	A-1	---	25-60	45-60	35-55	25-35	0-10	---	NP
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
84, 85-------- Jonas	0-6	Gravelly loam	SM, ML, MH	A-4, A-5, A-6, A-7	---	0-5	70-85	55-75	40-65	35-55	35-55	5-20
	6-43	Cobbly loam, gravelly clay loam, gravelly loam.	SM, ML, MH	A-4, A-5, A-6, A-7	---	0-25	75-90	65-85	40-65	35-55	35-55	5-20
	43-54	Very gravelly loam, gravelly loam.	SM, GM	A-2	---	0-10	50-70	40-60	30-50	25-35	30-40	5-10
	54	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
86, 87, 88---- Jonas	0-16	Gravelly silt loam.	SM, ML, MH	A-5, A-7	---	0-5	80-85	55-75	50-70	40-65	40-65	5-20
	16-60	Cobbly loam, cobbly clay loam, gravelly clay loam.	ML, MH	A-5, A-7	---	10-30	90-95	70-80	65-75	50-65	40-60	5-20
89, 90, 91---- Kaleetan	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-80	30-45	15-20	NP-5
	4-9	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-1	---	5-20	65-90	65-75	35-65	20-50	30-40	NP-5
	9-35	Very gravelly sandy loam, very gravelly loam.	GM	A-2, A-4	---	10-25	40-70	35-55	25-50	15-40	30-40	5-10
	35-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly sandy loam.	GP-GM, SP-SM, SM, GM	A-1	---	15-35	35-60	15-40	15-35	5-15	15-20	NP-5
92, 93-------- Kaleetan	0-5	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-80	30-45	15-20	NP-5
	5-12	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-5, A-6	---	5-10	65-80	65-75	35-65	20-50	30-45	5-15
	12-23	Very gravelly sandy loam, very gravelly loam.	GM	A-2, A-4	---	10-25	40-70	35-55	25-50	15-40	30-40	5-10
	23-41	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly sandy loam.	GP-GM, GM	A-1	---	15-35	35-60	15-40	15-35	5-20	15-20	NP-5
	41	Cemented material.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
94, 95-------- Kaleetan	0-6	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-80	30-45	15-20	NP-5
	6-17	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-1	---	5-20	65-90	65-75	35-65	20-50	30-40	NP-5
	17-34	Very gravelly sandy loam, very gravelly loam.	GM	A-2, A-4	---	10-25	40-70	35-55	25-50	15-40	30-40	5-10
	34-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly sandy loam.	GP-GM, SP-SM, SM, GM	A-1	---	15-35	35-60	15-40	15-35	5-15	15-20	NP-5
96, 97-------- Kanaskat	0-11	Gravelly sandy loam.	SM	A-2, A-1	---	0-5	65-85	55-75	35-50	20-35	25-35	NP-5
	11-23	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2, A-1	---	0-10	40-65	20-55	15-45	10-35	30-40	NP-10
	23-38	Very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	0-15	40-60	30-45	25-35	15-25	30-40	NP-10
	38-60	Very gravelly sandy loam, extremely gravelly sandy loam, extremely gravelly coarse sandy loam.	GM, GP-GM	A-1	---	5-15	25-50	15-40	10-30	5-20	25-35	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
98, 99-------- Kanaskat	0-7	Gravelly sandy loam.	SM	A-2, A-1	---	0-5	65-85	55-75	35-50	20-35	25-35	NP-5
	7-18	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2, A-1	---	0-10	40-65	20-55	15-45	10-35	30-40	NP-10
	18-30	Very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	0-15	40-60	30-45	25-35	15-25	30-40	NP-10
	30-60	Very gravelly sandy loam, extremely gravelly sandy loam, extremely gravelly coarse sandy loam.	GM, GP-GM	A-1	---	5-15	25-50	15-40	10-30	5-20	25-35	NP-5
100, 101, 102- Kapowsin	0-9	Gravelly loam	SM, ML, GM	A-4, A-5	---	0-5	65-85	55-75	50-65	35-60	30-50	NP-10
	9-24	Gravelly loam, silt loam, loam.	SM, ML	A-4, A-5	---	0-5	75-90	65-85	50-75	40-70	30-45	NP-10
	24-37	Gravelly loam, gravelly sandy loam, loam.	SM	A-4, A-2, A-1	---	0-10	65-90	55-85	35-65	20-50	15-25	NP-5
	37	Cemented material.	---	---	---	---	---	---	---	---	---	---
103, 104, 105- Kindy	0-6	Gravelly loam	SM	A-4	---	0-10	75-90	60-75	50-60	40-50	25-35	NP-5
	6-10	Gravelly loam, gravelly silt loam, very gravelly silt loam.	GM, ML	A-2, A-4	---	0-15	50-75	40-70	35-65	30-55	30-40	NP-5
	10-23	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2	---	0-15	45-65	30-45	20-40	15-35	30-40	NP-5
	23-32	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	---	0-25	45-65	30-45	20-40	10-35	15-25	NP-5
	32	Cemented material.	---	---	---	---	---	---	---	---	---	---
106---------- Klaber	0-6	Silt loam-----	CL-ML	A-4	0	0	100	100	90-100	70-90	25-30	5-10
	6-22	Silty clay loam, silt loam, silty clay.	CL	A-7	0	0	100	100	95-100	80-95	40-50	15-25
	22-60	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	95-100	90-95	55-65	30-40

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
107*:												
Klaber	0-6	Silt loam	CL-ML	A-4	0	0	100	100	90-100	70-90	25-30	5-10
	6-22	Silty clay loam, silt loam, silty clay.	CL	A-7	0	0	100	100	95-100	80-95	40-50	15-25
	22-60	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	95-100	90-95	55-65	30-40
Cinebar	0-10	Silt loam	ML, MH	A-4, A-5, A-6, A-7	---	0-5	85-100	80-100	75-100	70-90	35-65	NP-20
	10-54	Silt loam	ML, MH	A-5, A-7	---	0-5	85-100	80-100	75-100	70-90	40-60	5-20
	54-60	Silt loam, loam.	ML, MH	A-5, A-7	---	0-5	85-100	80-100	75-100	65-90	40-60	5-20
108, 109 Klapatche	0-8	Loamy sand	SM	A-1, A-2	---	0-5	80-100	80-95	40-60	15-25	---	NP
	8-12	Very gravelly sandy loam, gravelly silt loam, very gravelly loamy sand.	SM, GM	A-1, A-2, A-4	---	0-10	60-80	40-75	35-60	10-50	15-20	NP-5
	12-20	Gravelly sandy loam, extremely gravelly sand, very gravelly loamy sand.	SM, GM, SP-SM, GP-GM	A-1	---	0-15	35-80	30-70	15-35	5-15	---	NP
	20-31	Extremely cobbly sand, very cobbly sand, extremely gravelly sand.	GP, SP	A-1	---	25-50	35-60	30-55	10-25	0-5	---	NP
	31-38	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
110*:												
Klapatche----	0-8	Loamy sand----	SM	A-1, A-2	---	0-5	80-100	80-95	40-60	15-25	---	NP
	8-12	Very gravelly sandy loam, gravelly silt loam, very gravelly loamy sand.	SM, GM	A-1, A-2, A-4	---	0-10	60-80	40-75	35-60	10-50	15-20	NP-5
	12-20	Gravelly sandy loam, extremely gravelly sand, very gravelly loamy sand.	SM, GM, SP-SM, GP-GM	A-1	---	0-15	35-80	30-70	15-35	5-15	---	NP
	20-31	Extremely cobbly sand, very cobbly sand, extremely gravelly sand.	GP, SP	A-1	---	25-50	35-60	30-55	10-25	0-5	---	NP
	31-38	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
111, 112, 113, 114, 115-----	0-7	Sandy loam----	SM	A-2, A-4	0	0	90-100	90-100	55-70	30-40	15-20	NP-5
Klaus	7-16	Sandy loam, gravelly sandy loam.	SM	A-1, A-2	---	0-10	75-90	60-80	40-55	20-30	20-30	NP-5
	16-28	Very gravelly loamy sand, very gravelly sand, extremely gravelly sand.	GP, GP-GM	A-1	---	10-45	40-50	20-40	10-20	0-10	---	NP
	28	Cemented material.	---	---	---	---	---	---	---	---	---	---
116, 117------	0-6	Loamy sand----	SM	A-1, A-2	0	0	90-100	85-95	45-65	15-25	---	NP
Larrupin	6-24	Loamy sand, gravelly loamy sand, gravelly sandy loam.	SM	A-1, A-2	---	0-10	75-90	65-85	40-60	15-35	15-20	NP-5
	24-35	Very gravelly sandy loam.	SM, GM	A-1	---	10-25	50-75	35-55	25-45	15-25	15-20	NP-5
	35-60	Very gravelly sandy loam, very gravelly loamy sand.	SM, GM	A-1	---	10-25	50-75	35-55	20-40	10-20	15-20	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
118---------- Larrupin	0-6	Loamy sand----	SM	A-1, A-2	0	0	85-95	75-85	40-60	15-25	---	NP
	6-17	Cindery loamy sand, cindery sandy loam, loamy sand.	SM	A-2, A-1	---	0-5	90-95	55-85	35-75	15-35	---	NP
	17-35	Very cobbly loam, very gravelly loam.	SM, ML	A-2, A-5, A-7, A-6	---	30-65	70-90	40-75	35-70	25-60	35-50	5-15
	35-52	Very cobbly loam, very gravelly loam, very gravelly sandy loam.	SM	A-1, A-2, A-4	---	30-65	70-90	40-70	30-60	20-50	30-40	NP-10
	52	Cemented material.	---	---	---	---	---	---	---	---	---	---
119---------- Lemolo	0-5	Silt loam-----	ML, OL	A-4	0	0	90-100	80-100	70-90	60-80	30-40	5-10
	5-17	Silt loam, loam.	ML	A-4	---	0-5	90-100	80-100	60-85	50-75	30-40	5-10
	17-60	Very gravelly sandy loam, extremely gravelly sandy clay loam, very gravelly sandy clay loam.	GC, GM-GC, GP-GC	A-2	---	5-25	30-55	20-45	15-35	5-15	20-35	5-15
120, 121, 122- Littlejohn	0-11	Gravelly sandy loam.	SM	A-2	---	10-15	75-90	50-85	35-50	20-30	30-40	5-10
	11-17	Very gravelly loam, very gravelly sandy loam, gravelly sandy loam.	SM, GM	A-2	---	10-15	40-90	30-85	20-60	15-35	30-40	5-10
	17-30	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2	---	15-30	30-50	20-40	15-35	10-25	30-40	5-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
123, 124------ Littlejohn	0-7	Gravelly sandy loam.	SM	A-2	---	10-15	75-90	50-85	35-50	20-30	30-40	5-10
	7-18	Gravelly loam, very gravelly sandy loam, gravelly sandy loam.	SM, GM	A-2	---	10-15	40-90	30-85	20-60	15-35	30-40	5-10
	18-27	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2	---	15-30	30-50	20-40	15-35	10-25	30-40	5-10
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
125---------- Littlejohn	0-11	Gravelly sandy loam.	SM	A-2	---	10-15	75-90	50-85	35-50	20-30	30-40	5-10
	11-30	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2	---	15-30	30-50	20-40	15-35	10-25	30-40	5-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
126*: Littlejohn---	0-11	Gravelly sandy loam.	SM	A-2	---	10-15	75-90	50-85	35-50	20-30	30-40	5-10
	11-17	Very gravelly loam, very gravelly sandy loam, gravelly sandy loam.	SM, GM	A-2	---	10-15	40-90	30-85	20-60	15-35	30-40	5-10
	17-30	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-2	---	15-30	30-50	20-40	15-35	10-25	30-40	5-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
127---------- Lynnwood	0-6	Loamy fine sand.	SM	A-2	0	0	95-100	90-100	50-80	20-35	---	NP
	6-21	Loamy sand, loamy fine sand.	SM	A-2	0	0	80-100	75-100	50-75	15-35	---	NP
	21-60	Loamy sand, fine sand, loamy fine sand.	SM, SP-SM, SP	A-2, A-3, A-1	0	0	80-100	75-100	40-75	0-30	---	NP
128, 129------ Marblemount	0-5	Gravelly loamy sand.	SM	A-1, A-2	---	0-5	75-90	60-75	40-55	15-30	---	NP
	5-35	Very gravelly loamy sand, very stony loamy sand, extremely gravelly loamy sand.	SM, GM, GP-GM, SP-SM	A-1	---	10-40	45-65	30-50	15-30	5-15	---	NP
	35	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
130---------- Marblemount	0-7	Gravelly loamy sand.	SM	A-1	---	0-5	75-90	60-75	40-50	15-20	---	NP
	7-16	Very gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	---	0-10	35-50	30-40	10-20	5-15	---	NP
	16-38	Very gravelly loamy sand, extremely gravelly loamy sand.	GP-GM	A-1	---	0-10	30-40	20-30	10-20	5-10	---	NP
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
131*: Marblemount--	0-5	Gravelly loamy sand.	SM	A-1, A-2	---	0-5	75-90	60-75	40-55	15-30	---	NP
	5-35	Very gravelly loamy sand, very stony loamy sand, extremely gravelly loamy sand.	SM, GM, GP-GM, SP-SM	A-1	---	10-40	45-65	30-50	15-30	5-15	---	NP
	35	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
132, 133------ Mashel	0-7	Silt loam-----	ML	A-4	0	0	95-100	85-100	80-95	70-90	30-40	5-10
	7-13	Loam, silt loam.	ML	A-4	0	0	95-100	85-100	80-95	50-85	30-40	5-10
	13-60	Silty clay, silty clay loam, clay loam.	ML, MH	A-7	0	0	95-100	85-100	75-100	65-95	45-55	10-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
134, 135, 136-Melakwa	0-7	Sandy loam	SM	A-4	0	0	80-90	75-85	55-65	35-45	30-35	NP-5
	7-22	Very gravelly sandy loam, very gravelly loam.	GM, SM	A-2	---	10-30	45-70	35-55	25-40	15-30	30-40	5-10
	22-37	Very gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GP-GM, GM	A-2	---	15-35	30-55	15-40	10-35	5-25	30-40	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
137-Melakwa	0-8	Sandy loam	SM	A-4	0	0	80-90	75-85	55-65	35-45	30-35	NP-5
	8-18	Very gravelly sandy loam, very gravelly loam.	GM, SM	A-2	---	10-30	45-70	35-55	25-40	15-30	30-40	5-10
	18-31	Very gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GP-GM, GM	A-2	---	15-35	30-55	15-40	10-35	5-25	30-40	5-10
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
138*:												
Melakwa	0-7	Sandy loam	SM	A-4	0	0	80-90	75-85	55-65	35-45	30-35	NP-5
	7-22	Very gravelly sandy loam, very gravelly loam.	GM, SM	A-2	---	10-30	45-70	35-55	25-40	15-30	30-40	5-10
	22-37	Very gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GP-GM, GM	A-2	---	15-35	30-55	15-40	10-35	5-25	30-40	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
139-Mowich	0-7	Silt loam	ML	A-4	0	0	90-100	80-100	80-100	70-90	30-40	NP-5
	7-26	Silt loam	ML	A-4, A-5	0	0	90-100	80-100	80-100	70-80	35-45	5-10
	26-60	Silty clay, clay.	CH, MH	A-7	---	0-5	85-100	75-100	75-95	70-90	50-70	25-35
140-Mukilteo	0-10	Peat	PT	A-8	0	0	---	---	---	---	---	---
	10-60	Hemic material	PT	A-8	0	0	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
141, 142------ Nagrom	0-4	Sandy loam----	SM	A-2, A-4	0	0	100	100	60-70	30-40	---	NP
	4-7	Sandy loam, loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-5	75-90	50-85	30-70	20-50	25-35	NP-5
	7-23	Gravelly loam, very gravelly loam, gravelly sandy loam.	SM	A-2, A-4	---	10-15	75-80	35-60	30-50	20-45	25-35	NP-5
	23-38	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2	---	10-20	45-60	30-45	25-40	20-35	25-35	NP-5
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
143, 144------ Nagrom	0-4	Gravelly loam	SM	A-2, A-4, A-1	0	0	75-90	55-75	30-60	20-45	25-35	NP-5
	4-10	Sandy loam, loam, gravelly loam.	SM	A-2, A-4	---	0-5	70-90	55-80	35-65	25-45	25-35	NP-5
	10-25	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	---	0-5	40-60	30-50	20-45	15-35	25-35	NP-5
	25-34	Very gravelly loam, very gravelly silt loam, extremely gravelly silt loam.	GM, GP-GM	A-1, A-2	---	0-5	30-55	20-45	15-40	10-30	25-35	NP-5
	34	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
145*: Nagrom-------	0-4	Sandy loam----	SM	A-2, A-4	0	0	100	100	60-70	30-40	---	NP
	4-7	Sandy loam, loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-5	75-90	50-85	30-70	20-50	25-35	NP-5
	7-23	Gravelly loam, very gravelly loam, gravelly sandy loam.	SM	A-2, A-4	---	10-15	75-80	35-60	30-50	20-45	25-35	NP-5
	23-38	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2	---	10-20	45-60	30-45	25-40	20-35	25-35	NP-5
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
146, 147--- Nargar	0-2	Fine sandy loam.	ML, SM	A-4	0	0	90-100	85-100	65-90	35-60	25-35	NP-5
	2-24	Loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	90-100	85-100	50-90	35-70	25-40	NP-10
	24-60	Loamy fine sand, sand, gravelly coarse sand.	SM, SP-SM	A-1	0	0	60-100	50-90	25-50	0-25	---	NP
148*:												
Nargar---	0-2	Fine sandy loam.	ML, SM	A-4	0	0	90-100	85-100	65-90	35-60	25-35	NP-5
	2-24	Loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	90-100	85-100	50-90	35-70	25-40	NP-10
	24-60	Loamy fine sand, sand, gravelly coarse sand.	SM, SP-SM	A-1	0	0	60-100	50-90	25-50	0-25	---	NP
Pastik---	0-6	Silt loam---	ML	A-4, A-5	0	0	100	100	85-100	75-90	35-45	5-10
	6-31	Silt loam, loam, very fine sandy loam.	ML	A-4, A-5	0	0	100	100	85-100	70-80	35-45	5-10
	31-60	Silt loam, silty clay loam, very fine sandy loam.	ML	A-4, A-6	0	0	100	100	80-90	70-90	30-40	5-15
149--- National	0-10	Cindery sandy loam.	SM	A-2, A-1	0	0	75-100	50-75	30-50	15-30	---	NP
	10-28	Very cindery sand, very cindery sandy loam, very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-100	25-50	15-30	5-15	---	NP
	28-46	Loam, sandy loam, fine sandy loam.	SM, ML	A-4, A-2	---	0-5	85-95	80-90	55-75	25-55	25-40	NP-10
	46-60	Silt loam, gravelly sandy loam.	ML, SM	A-4, A-2, A-1	---	0-5	90-100	50-80	35-75	20-60	25-40	NP-10
150--- Neilton	0-16	Gravelly loamy sand.	SM	A-2, A-1	---	0-10	60-70	55-65	35-55	15-25	---	NP
	16-21	Very gravelly loamy sand, extremely gravelly sand, extremely cobbly sand.	GP-GM	A-1	---	20-45	40-50	20-50	10-25	5-10	---	NP
	21-60	Very gravelly sand, very gravelly loamy sand, extremely cobbly sand.	GP, GP-GM	A-1	---	10-35	35-55	20-50	10-25	0-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
151, 152, 153-Nimue	0-5	Loamy sand----	SM	A-2	0	0	90-100	90-100	50-70	15-25	---	NP
	5-10	Loamy sand, sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	50-70	15-40	---	NP
	10-24	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	GM, GP-GM	A-1, A-2	---	15-30	30-60	15-45	10-45	5-35	20-30	NP-5
	24-60	Extremely gravelly loam, extremely gravelly sandy loam, extremely gravelly silt loam.	GM, GP-GM	A-1	---	15-35	25-50	15-30	10-25	5-20	20-30	NP-5
154, 155------Nimue	0-6	Loamy sand----	SM	A-2	0	0	90-100	90-100	50-70	15-25	---	NP
	6-15	Loamy sand, sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	50-70	15-40	---	NP
	15-32	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	GM, GP-GM	A-1, A-2	---	15-30	30-60	15-45	10-45	5-35	20-30	NP-5
	32-60	Extremely gravelly loam, extremely gravelly sandy loam, extremely gravelly silt loam.	GM, GP-GM	A-1	---	15-35	25-50	15-30	10-25	5-20	20-30	NP-5
156*:												
Nimue---------	0-5	Loamy sand----	SM	A-2	0	0	90-100	90-100	50-70	15-25	---	NP
	5-10	Loamy sand, sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	50-70	15-40	---	NP
	10-24	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	GM, GP-GM	A-1, A-2	---	15-30	30-60	15-45	10-45	5-35	20-30	NP-5
	24-60	Extremely gravelly loam, extremely gravelly sandy loam, extremely gravelly silt loam.	GM, GP-GM	A-1	---	15-35	25-50	15-30	10-25	5-20	20-30	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
156*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
157----------	0-11	Silt loam-----	ML	A-4	0	0	100	100	95-100	75-85	20-30	NP-5
Nooksack	11-29	Silt loam-----	ML	A-4	0	0	100	100	95-100	75-90	20-30	NP-5
	29-60	Silt loam-----	ML	A-4	0	0	100	100	95-100	75-85	20-30	NP-5
158----------	0-9	Loam----------	ML	A-4	0	0	90-100	85-100	55-75	50-70	15-25	NP-5
Norma	9-33	Loam, gravelly sandy loam, gravelly loam.	SM, GM	A-2, A-4	0	0	60-90	55-85	45-65	25-50	15-20	NP-5
	33-60	Very gravelly sandy loam.	GM, SM	A-1	0	0-5	45-60	30-50	25-50	10-25	---	NP
159----------	0-8	Gravelly loam	GM, SM	A-4	---	0-5	60-80	55-75	50-60	35-50	25-35	NP-10
Oakes	8-60	Very gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-2, A-1	---	5-30	35-50	25-45	20-40	10-30	30-40	NP-10
160----------	0-6	Cobbly loam---	SM	A-4	---	15-30	80-100	70-90	60-70	40-50	30-40	NP-10
Oakes	6-44	Very cobbly silt loam, very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-2, A-1	---	20-30	35-60	25-50	20-40	10-30	30-40	NP-10
	44	Cemented material.	---	---	---	---	---	---	---	---	---	---
161----------	0-6	Cobbly loam---	SM	A-4	---	15-30	80-100	70-90	60-70	40-50	30-40	NP-10
Oakes	6-44	Very cobbly silt loam, very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-2, A-1	---	20-30	35-60	25-50	20-40	10-30	30-40	NP-10
	44	Cemented material.	---	---	---	---	---	---	---	---	---	---
162, 163------	0-4	Gravelly loam	SM	A-4, A-2	---	0-5	70-80	55-75	40-60	30-40	30-40	NP-5
Ogarty	4-37	Very gravelly sandy loam, very gravelly fine sandy loam, extremely gravelly fine sandy loam.	GP-GM, GM	A-1	---	0-20	10-35	5-35	5-30	5-20	30-40	NP-5
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
164*:												
Ogarty-------	0-4	Gravelly loam	SM	A-4, A-2	---	0-5	70-80	55-75	40-60	30-40	30-40	NP-5
	4-37	Very gravelly sandy loam, very gravelly fine sandy loam, extremely gravelly fine sandy loam.	GP-GM, GM	A-1	---	0-20	10-35	5-35	5-30	5-20	30-40	NP-5
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
165----------	0-7	Sandy loam----	SM	A-2	0	0	90-100	85-100	45-75	25-35	20-30	NP-5
Ohop	7-16	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	10-30	35-60	25-50	20-40	10-30	15-25	NP-5
	16-60	Very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam.	GM	A-1, A-2	---	20-35	35-60	25-50	20-40	10-30	15-25	NP-5
166----------	0-7	Very gravelly loam.	GC, GM-GC	A-2	---	0-5	40-60	30-50	25-45	20-35	25-35	5-15
Ohop	7-16	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	GM	A-1, A-2	---	10-30	35-60	25-50	20-40	10-30	15-25	NP-5
	16-60	Very gravelly sandy loam, extremely gravelly sandy loam, very cobbly sandy loam.	GM	A-1, A-2	---	20-35	35-60	25-50	20-40	10-30	15-25	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
167, 168------ Olomount	0-6	Gravelly loam	GM, SM	A-2, A-4	---	0-10	60-80	55-75	40-60	30-50	30-40	NP-5
	6-14	Gravelly silt loam, gravelly loam, cobbly loam.	GM, SM	A-2, A-4	---	0-25	60-80	60-75	40-60	30-50	30-40	NP-5
	14-33	Very gravelly silt loam, very gravelly loam, extremely gravelly loam.	GM, GP-GM	A-1, A-2	---	0-25	20-50	10-40	10-35	10-30	30-40	NP-5
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
169*:												
Olomount-----	0-6	Gravelly loam	GM, SM	A-2, A-4	---	0-10	60-80	55-75	40-60	30-50	30-40	NP-5
	6-14	Gravelly silt loam, gravelly loam, cobbly loam.	GM, SM	A-2, A-4	---	0-25	60-80	60-75	40-60	30-50	30-40	NP-5
	14-33	Very gravelly silt loam, very gravelly loam, extremely gravelly loam.	GM, GP-GM	A-1, A-2	---	0-25	20-50	10-40	10-35	10-30	30-40	NP-5
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
170----------- Oridia	0-11	Silt loam-----	ML	A-4	0	0	100	100	95-100	90-100	25-35	NP-10
	11-19	Silt loam, very fine sandy loam.	ML	A-4	0	0	100	100	95-100	85-100	25-35	NP-10
	19-60	Silt loam, silty clay loam, very fine sandy loam.	ML, CL	A-4, A-6, A-7	0	0	100	100	95-100	85-100	25-45	NP-20
171*:												
Orthents-----	0-6	Very cobbly sandy loam.	SM, GM	A-1, A-2	0	15-25	55-90	40-85	25-60	15-30	15-25	NP-5
	6-24	Very gravelly sandy loam, very cobbly loamy sand.	GM, SM, GP-GM, SP-SM	A-1	0	10-55	50-90	35-80	25-50	10-25	15-20	NP-5
	24-30	Extremely stony loamy sand, very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	25-40	5-35	40-90	20-75	15-45	5-20	15-20	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
171*:												
Humods	0-5	Very gravelly sandy loam.	SM, GM	A-1	---	10-30	50-75	35-50	20-45	15-25	15-25	NP-5
	5-14	Very gravelly sandy loam, very cobbly loamy sand, extremely stony sandy loam.	SM, GM	A-1	---	25-55	50-90	35-70	20-50	10-25	---	NP
	14-26	Extremely stony sandy loam, very gravelly loamy sand, extremely stony loam.	SM, GM, GP-GM, SP-SM	A-1	---	25-65	40-90	20-65	15-45	5-25	---	NP
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
172, 173	0-3	Gravelly loam	SM	A-4	---	0-10	70-85	55-75	50-70	35-50	20-30	NP-5
Ovall	3-24	Very gravelly loam, very gravelly sandy loam.	SM, GM	A-1, A-2	---	0-25	55-75	30-50	25-45	15-35	15-25	NP-5
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
174	0-6	Silt loam	ML	A-4, A-5	0	0	100	100	85-100	75-90	35-45	5-10
Pastik	6-31	Silt loam, loam, very fine sandy loam.	ML	A-4, A-5	0	0	100	100	85-100	70-80	35-45	5-10
	31-60	Silt loam, silty clay loam.	ML	A-4, A-6	0	0	100	100	80-90	70-90	30-40	5-15
175, 176	0-4	Sandy loam	SM	A-4	0	0	95-100	90-100	50-70	35-45	25-30	NP-5
Persis	4-13	Sandy loam, loam.	SM, ML	A-4	0	0	90-100	85-100	50-80	35-60	30-40	NP-5
	13-29	Sandy loam, loam.	SM, ML	A-2, A-4	0	0	85-100	75-100	40-75	25-60	30-40	NP-5
	29-60	Sand, gravelly sand, loamy sand.	SM, SP-SM	A-1, A-2	---	0-5	80-100	60-100	20-50	5-30	---	NP
177, 178	0-11	Gravelly loam	SM, ML, MH	A-5, A-7	0	0	70-80	55-75	50-70	35-55	40-60	5-20
Pheeney	11-34	Very gravelly loam, extremely cobbly silt loam, extremely gravelly loam.	GM	A-5, A-2, A-1, A-7	---	15-65	35-65	25-60	20-55	15-45	40-60	5-20
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
179, 180------ Pheeney	0-4	Gravelly silt loam.	SM, ML, MH	A-5, A-7	0	0	70-80	55-75	50-70	35-55	40-60	5-20
	4-12	Gravelly silt loam, gravelly loam.	SM, ML, MH	A-5, A-7	0	0	70-80	55-75	50-70	35-55	40-60	5-20
	12-34	Very gravelly loam, extremely gravelly silt loam, extremely gravelly loam.	GM	A-1, A-2	---	0-15	30-50	25-45	20-40	15-35	40-60	5-20
	34	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
181*: Pheeney------	0-11	Gravelly loam	SM, ML, MH	A-5, A-7	0	0	70-80	55-75	50-70	35-55	40-60	5-20
	11-34	Very gravelly loam, extremely cobbly silt loam, extremely gravelly loam.	GM	A-5, A-2, A-1, A-7	---	15-65	35-65	25-60	20-55	15-45	40-60	5-20
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
182, 183------ Philippa	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	55-70	30-40	30-40	NP-5
	4-9	Silt loam, gravelly silt loam, gravelly loam.	ML, MH	A-5	---	0-5	75-90	70-85	65-80	50-65	45-55	NP-5
	9-18	Gravelly loam, gravelly silt loam, very gravelly loam.	GM, SM	A-2, A-5	---	0-10	50-80	45-75	40-70	30-50	40-50	NP-5
	18-28	Very gravelly loam, very gravelly sandy loam, extremely gravelly loam.	GM	A-1	---	10-30	40-45	30-40	20-35	10-25	35-45	NP-5
	28	Cemented material.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
184---------- Pierking	0-6	Gravelly sandy loam.	SM, SC-SM	A-1, A-2	---	0-5	70-85	60-75	35-50	15-25	20-30	NP-10
	6-34	Very gravelly sandy loam, gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	---	0-5	40-70	30-60	20-40	10-30	10-20	NP-10
	34-60	Very gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	---	0-10	35-60	25-50	10-30	5-20	10-20	NP-5
185*:												
Pierking-----	0-6	Gravelly sandy loam.	SM, SC-SM	A-1, A-2	---	0-5	70-85	60-75	35-50	15-25	20-30	NP-10
	6-34	Very gravelly sandy loam, gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	---	0-5	40-70	30-60	20-40	10-30	10-20	NP-10
	34-60	Very gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	---	0-10	35-60	25-50	10-30	5-20	10-20	NP-5
Borohemists--	0-4	Mucky-peat----	PT	A-8	0	0	---	---	---	---	---	---
	4-30	Hemic material	PT	A-8	0	0	---	---	---	---	---	---
	30-60	Variable------	---	---	---	---	---	---	---	---	---	---
186*:												
Pierking-----	0-6	Gravelly sandy loam.	SM, SC-SM	A-1, A-2	---	0-5	70-85	60-75	35-50	15-25	20-30	NP-10
	6-34	Very gravelly sandy loam, gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	---	0-5	40-70	30-60	20-40	10-30	10-20	NP-10
	34-60	Very gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	---	0-10	35-60	25-50	10-30	5-20	10-20	NP-5
Mowich-------	0-7	Silt loam-----	ML	A-4	0	0	90-100	80-100	80-100	70-90	30-40	NP-5
	7-26	Silt loam-----	ML	A-4, A-5	0	0	90-100	80-100	80-100	70-80	35-45	5-10
	26-60	Silty clay, clay.	CH, MH	A-7	---	0-5	85-100	75-100	75-95	70-90	50-70	25-35
187---------- Pilchuck	0-9	Loamy fine sand.	SM	A-1, A-2	0	0	80-100	75-100	45-65	10-30	---	NP
	9-55	Sand, fine sand, loamy fine sand.	SM, SP-SM	A-2	0	0	80-100	75-100	50-80	5-15	---	NP
	55-60	Gravelly sand, very gravelly sand, gravelly coarse sand.	SP, GP	A-1	---	5-15	35-80	30-75	10-40	0-5	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
188, 189, 190-Pitcher	0-8	Sandy loam----	SM	A-2	0	0	95-100	75-100	45-60	25-35	15-20	NP-5
	8-16	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-1	0	0	75-85	60-75	40-55	20-45	20-30	NP-5
	16-29	Very gravelly sandy loam, very gravelly loam.	SM, GM	A-1, A-2	---	0-25	60-70	40-50	30-45	20-35	20-30	NP-5
	29-60	Extremely gravelly sandy loam, very gravelly loam, extremely cobbly loam.	GM	A-1, A-2	---	10-40	40-55	15-45	10-35	10-30	20-30	NP-5
191, 192, 193-Pitcher	0-7	Sandy loam----	SM	A-2	0	0	95-100	75-100	45-60	25-35	15-20	NP-5
	7-13	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-1	0	0	75-85	60-75	40-55	20-45	20-30	NP-5
	13-29	Very gravelly sandy loam, very gravelly loam.	SM, GM	A-1, A-2	---	0-25	60-70	40-50	30-45	20-35	20-30	NP-5
	29-60	Extremely gravelly sandy loam, very gravelly loam, extremely cobbly loam.	GM	A-1, A-2	---	10-40	40-55	15-45	10-35	10-30	20-30	NP-5
194*:												
Pitcher------	0-8	Sandy loam----	SM	A-2	0	0	95-100	75-100	45-60	25-35	15-20	NP-5
	8-16	Gravelly sandy loam, gravelly loam.	SM	A-2, A-4, A-1	0	0	75-85	60-75	40-55	20-45	20-30	NP-5
	16-29	Very gravelly sandy loam, very gravelly loam.	SM, GM	A-1, A-2	---	0-25	60-70	40-50	30-45	20-35	20-30	NP-5
	29-60	Extremely gravelly sandy loam, very gravelly loam, extremely cobbly loam.	GM	A-1, A-2	---	10-40	40-55	15-45	10-35	10-30	20-30	NP-5
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
195*---------- Pits	0-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
196, 197, 198-Playco	0-6	Loamy sand	SM	A-2	0	0	90-100	85-100	50-70	15-30	---	NP
	6-10	Loamy sand, sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	50-70	15-40	---	NP
	10-36	Very gravelly sandy loam, very gravelly loam, extremely gravelly loam.	SM, GM	A-2	---	5-20	40-70	25-50	15-45	10-35	40-50	10-20
	36-60	Extremely gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GM	A-2	---	15-30	30-60	25-45	15-40	10-30	40-50	10-20
199, 200-----Playco	0-7	Very gravelly loamy sand.	GM, SM	A-1	0	0	50-70	40-60	30-40	10-15	---	NP
	7-17	Very gravelly loamy sand.	GM, SM	A-1	0	0	45-70	35-60	25-40	10-15	---	NP
	17-50	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	SM, GM	A-2, A-1	---	0-5	50-70	25-50	15-45	10-30	---	NP
	50-60	Extremely gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GM	A-2, A-1	---	15-30	30-60	25-45	15-40	10-30	20-30	NP-5
201*:												
Playco-------	0-6	Loamy sand	SM	A-2	0	0	90-100	85-100	50-70	15-30	---	NP
	6-10	Loamy sand, sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	50-70	15-40	---	NP
	10-36	Very gravelly sandy loam, very gravelly loam, extremely gravelly sandy loam.	SM, GM	A-2	---	5-20	40-70	25-50	15-45	10-35	40-50	10-20
	36-60	Extremely gravelly sandy loam, very gravelly loam, extremely gravelly loam.	GM	A-2	---	15-30	30-60	25-45	15-40	10-30	40-50	10-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
201*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
202----------	0-7	Silty clay loam.	CL, ML	A-7, A-6	0	0	100	100	95-100	85-95	35-45	10-20
Puget	7-45	Silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	25-40	5-20
	45-60	Silty clay loam, silty clay, silt loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	85-95	25-40	5-20
203, 204------	0-13	Loam----------	ML	A-4, A-5	0	0	95-100	90-100	70-90	50-80	30-50	NP-10
Ragnar	13-24	Fine sandy loam, sandy loam.	SM	A-4	0	0	95-100	75-100	60-85	35-50	20-40	NP-10
	24-60	Loamy sand, sand.	SM, SP, SP-SM	A-2, A-1, A-3	0	0	95-100	85-95	45-70	0-20	---	NP
205*:												
Ragnar-------	0-13	Loam----------	ML	A-4, A-5	0	0	95-100	90-100	70-90	50-80	30-50	NP-10
	13-24	Fine sandy loam, sandy loam.	SM	A-4	0	0	95-100	75-100	60-85	35-50	20-40	NP-10
	24-60	Loamy sand, sand.	SM, SP, SP-SM	A-2, A-1, A-3	0	0	95-100	85-95	45-70	0-20	---	NP
Lynnwood-----	0-6	Loamy fine sand.	SM	A-2	0	0	95-100	90-100	50-80	20-35	---	NP
	6-26	Loamy sand, loamy fine sand.	SM	A-2	0	0	80-100	75-100	50-75	15-35	---	NP
	26-60	Loamy sand, fine sand, loamy fine sand.	SM, SP-SM, SP	A-2, A-3, A-1	0	0	80-100	75-100	40-75	0-30	---	NP
206*:												
Ragnar-------	0-13	Loam----------	ML	A-4, A-5	0	0	95-100	90-100	70-90	50-80	30-50	NP-10
	13-24	Fine sandy loam, sandy loam.	SM	A-4	0	0	95-100	75-100	60-85	35-50	20-40	NP-10
	24-60	Loamy sand, sand.	SM, SP, SP-SM	A-2, A-1, A-3	0	0	95-100	85-95	45-70	0-20	---	NP
Lynnwood-----	0-6	Loamy fine sand.	SM	A-2	0	0	95-100	90-100	50-80	20-35	---	NP
	6-26	Loamy sand, loamy fine sand.	SM	A-2	0	0	80-100	75-100	50-75	15-35	---	NP
	26-60	Loamy sand, fine sand, loamy fine sand.	SM, SP-SM, SP	A-2, A-3, A-1	0	0	80-100	75-100	40-75	0-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
207---------- Reggad	0-8	Very cobbly muck.	PT	A-8	---	50-75	---	---	---	---	---	---
	8-17	Very cobbly sapric material.	PT	A-8	---	50-70	---	---	---	---	---	NP
	17-60	Fragmental material.	GP	A-1	---	80-85	25-40	0-5	0-5	---	---	NP
208*:												
Reggad-------	0-8	Very cobbly muck.	PT	A-8	---	50-75	---	---	---	---	---	---
	8-17	Very cobbly sapric material.	PT	A-8	---	50-70	---	---	---	---	---	NP
	17-60	Fragmental material.	GP	A-1	---	80-85	25-40	0-5	0-5	---	---	NP
Haywire------	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-65	25-40	15-25	NP-5
	4-17	Loam, gravelly sandy loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-10	75-95	60-90	40-80	20-50	25-35	NP-5
	17-25	Very cobbly loam, very gravelly loam.	GM, SM	A-2, A-4	---	10-30	55-75	50-65	40-55	25-40	30-40	NP-5
	25-36	Extremely gravelly loam, very gravelly silt loam, extremely cobbly loam.	GM	A-1, A-2	---	15-55	30-60	20-50	15-40	15-35	30-40	NP-5
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
209*:												
Reggad-------	0-8	Very cobbly muck.	PT	A-8	---	50-75	---	---	---	---	---	---
	8-17	Very cobbly sapric material.	PT	A-8	---	50-70	---	---	---	---	---	NP
	17-60	Fragmental material.	GP	A-1	---	80-85	25-40	0-5	0-5	---	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
209*:												
Klapatche----	0-8	Loamy sand----	SM	A-1, A-2	---	0-5	80-100	80-95	40-60	15-25	---	NP
	8-12	Very gravelly sandy loam, gravelly silt loam, very gravelly loamy sand.	SM, GM	A-1, A-2, A-4	---	0-10	60-80	40-75	35-60	10-50	15-20	NP-5
	12-20	Gravelly sandy loam, extremely gravelly sand, very gravelly loamy sand.	SM, GM, SP-SM, GP-GM	A-1	---	0-15	35-80	30-70	15-35	5-15	---	NP
	20-31	Extremely cobbly sand, very cobbly sand, extremely gravelly sand.	GP, SP	A-1	---	25-50	35-60	30-55	10-25	0-5	---	NP
	31-38	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
210*:												
Reggad-------	0-8	Very cobbly muck.	PT	A-8	---	50-75	---	---	---	---	---	---
	8-17	Very cobbly sapric material.	PT	A-8	---	50-70	---	---	---	---	---	NP
	17-60	Fragmental material.	GP	A-1	---	80-85	25-40	0-5	0-5	---	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
210*:												
Serene-------	0-6	Gravelly sandy loam.	SM	A-1, A-2	---	0-5	65-90	55-75	40-55	20-30	15-25	NP-5
	6-14	Gravelly sandy loam, very gravelly loamy sand, very gravelly sandy loam.	GM, SM	A-1	---	0-10	50-70	30-55	20-35	10-20	15-25	NP-5
	14-30	Extremely cobbly coarse sand, extremely cobbly loamy sand, very gravelly sand.	SP, SP-SM	A-1	---	45-70	50-70	35-60	15-25	0-10	---	NP
	30	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
211, 212------ Reichel	0-10	Silt loam-----	ML, MH, OL, OH	A-5, A-7	0	0	95-100	85-100	80-95	75-90	40-60	5-20
	10-18	Loam, silt loam.	ML, MH	A-5, A-7	---	0-5	90-100	75-95	60-90	50-85	40-60	5-20
	18-28	Gravelly clay loam, gravelly loam, silty clay loam.	ML, SM, MH	A-7	---	0-10	80-95	60-90	55-85	40-65	40-60	10-25
	28-47	Very cobbly loam, very gravelly loam, very gravelly clay loam.	GM	A-5, A-2, A-7	---	10-45	50-60	40-55	35-50	25-45	40-60	5-20
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
213, 214------ Reichel	0-14	Silt loam-----	ML, MH	A-5, A-7	0	0	90-100	85-100	75-95	55-75	40-60	5-20
	14-45	Clay loam, loam, gravelly loam.	ML, SM, MH	A-5, A-7	---	0-10	80-95	60-90	55-85	40-70	40-60	5-20
	45-60	Very cobbly loam, very gravelly loam, very gravelly clay loam.	GM	A-5, A-2, A-7	---	10-45	50-60	40-55	35-50	25-45	40-60	5-20
215*---------- Riverwash	0-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
216, 217------ Rober	0-6	Loam----------	ML	A-4, A-5	0	0	100	100	90-100	50-75	35-45	5-10
	6-30	Silt loam, loam.	ML	A-4, A-5	0	0	95-100	90-100	85-100	75-90	35-45	5-10
	30-60	Silt loam, silty clay loam.	ML	A-4, A-6	0	0	95-100	95-100	90-100	75-95	30-40	5-15
218*---------- Rock outcrop	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
219*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cattcreek----	0-7	Very cindery loamy sand.	SM, SP-SM	A-1	0	0	75-90	25-50	15-30	5-15	---	NP
	7-11	Very cindery sand, very cindery loamy sand.	SP-SM, SP	A-1	0	0	75-90	25-50	15-35	0-10	---	NP
	11-21	Extremely cindery sand, very cindery sand.	SP	A-1	0	0	70-90	10-35	5-20	0-5	---	NP
	21-60	Very gravelly sandy loam, extremely gravelly loam.	GM, GP-GM	A-1, A-2	---	10-35	20-35	10-35	10-20	5-20	25-45	NP-10
220*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cayuse-------	0-13	Sandy loam----	SM	A-2, A-4	0	0	85-100	80-100	40-60	30-50	25-30	NP-5
	13-30	Loam, sandy loam.	SM, ML	A-2, A-4	0	0	85-100	75-100	40-80	30-60	25-35	NP-5
	30-36	Gravelly loam, gravelly sandy loam.	SM	A-2, A-4	---	0-10	70-85	55-75	40-55	25-40	30-40	NP-10
	36-60	Very gravelly loam, gravelly loam, very gravelly sandy loam.	SM, GM	A-1, A-2	---	0-10	50-70	35-55	25-45	15-35	30-40	NP-10
221*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
221*:												
Haywire------	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-65	25-40	15-25	NP-5
	4-17	Loam, gravelly sandy loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-10	75-95	60-90	40-80	20-50	25-35	NP-5
	17-25	Very cobbly loam, very gravelly loam.	GM, SM	A-2, A-4	---	10-30	55-75	50-65	40-55	25-40	30-40	NP-5
	25-36	Extremely gravelly loam, very gravelly silt loam, extremely cobbly loam.	GM	A-1, A-2	---	15-55	30-60	20-50	15-40	15-35	30-40	NP-5
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
222*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rubble land--	0-60	Fragmental material.	GP	A-1	---	75-90	0-10	0-5	0-5	0	---	NP
Haywire------	0-4	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-100	50-65	25-40	15-25	NP-5
	4-17	Loam, gravelly sandy loam, gravelly loam.	SM	A-1, A-2, A-4	---	0-10	75-95	60-90	40-80	20-50	25-35	NP-5
	17-25	Very cobbly loam, very gravelly loam.	GM, SM	A-2, A-4	---	10-30	55-75	50-65	40-55	25-40	30-40	NP-5
	25-36	Extremely gravelly loam, very gravelly silt loam, extremely cobbly loam.	GM	A-1, A-2	---	15-55	30-60	20-50	15-40	15-35	30-40	NP-5
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
223*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rubble land--	0-60	Fragmental material.	GP	A-1	---	75-90	0-10	0-5	0-5	0	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
223*:												
Serene-------	0-6	Gravelly sandy loam.	SM	A-1, A-2	---	0-5	65-90	55-75	40-55	20-30	15-25	NP-5
	6-14	Gravelly sandy loam, very gravelly loamy sand, very gravelly sandy loam.	GM, SM	A-1	---	0-10	50-70	30-55	20-35	10-20	15-25	NP-5
	14-30	Extremely cobbly coarse sand, extremely cobbly loamy sand, very gravelly sand.	SP, SP-SM	A-1	---	45-70	50-70	35-60	15-25	0-10	---	NP
	30	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
224*---------- Rubble land	0-60	Fragmental material.	GP	A-1	---	75-90	0-10	0-5	0-5	0	---	NP
225---------- Rugles	0-11	Silt loam-----	CL-ML	A-4	0	0	95-100	90-100	85-95	75-90	20-25	5-10
	11-57	Silt loam, silty clay loam.	CL	A-6	---	0-5	95-100	85-100	80-95	70-90	25-35	10-15
	57-60	Silty clay loam.	CL	A-6, A-7	---	0-5	95-100	85-100	80-95	70-90	30-45	10-20
226---------- Salal	0-11	Silt loam-----	CL-ML	A-4	0	0	100	100	90-100	80-95	20-25	5-10
	11-50	Silt loam, very fine sandy loam.	CL-ML	A-4	0	0	100	100	90-100	80-90	20-25	5-10
	50-60	Silt loam, very fine sandy loam.	CL-ML	A-4	0	0	100	85-100	80-95	75-90	20-25	5-10
227---------- Sauk	0-6	Silt loam-----	ML	A-4, A-5	0	0	90-100	85-100	80-95	70-85	35-45	NP-10
	6-22	Silt loam, very fine sandy loam, fine sandy loam.	ML	A-4, A-5	0	0	90-100	85-100	80-95	60-85	35-45	NP-10
	22-42	Silt loam, very fine sandy loam, fine sandy loam.	ML	A-4	0	0	90-100	85-100	80-95	60-85	15-25	NP-5
	42-60	Very gravelly loamy sand, very gravelly sandy loam, very gravelly sand.	GM, SM, GP, SP	A-1	---	0-10	45-70	40-55	20-45	0-15	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
228, 229, 230-Scamman	0-6	Silt loam	CL	A-6	0	0-5	90-100	85-95	80-90	75-85	30-40	10-15
	6-14	Silty clay loam, silt loam.	CL	A-6, A-7	0	0-5	90-100	85-95	80-90	75-85	30-45	15-25
	14-27	Silty clay loam, silty clay.	CL, CH	A-7	0	0-5	90-100	85-95	80-90	75-85	45-55	20-30
	27-60	Silty clay, clay.	CH	A-7	0-5	0-15	75-90	75-85	70-85	70-80	50-70	25-40
231-Seattle	0-8	Muck	PT	A-8	0	0	---	---	---	---	---	---
	8-60	Stratified sapric material to hemic material.	PT	A-8	0	0	---	---	---	---	---	---
232, 233-Serene	0-6	Gravelly sandy loam.	SM	A-1, A-2	---	0-5	65-90	55-75	40-55	20-30	15-25	NP-5
	6-14	Gravelly sandy loam, very gravelly loamy sand, very gravelly sandy loam.	GM, SM	A-1	---	0-10	50-70	30-55	20-35	10-20	15-25	NP-5
	14-30	Extremely cobbly coarse sand, extremely cobbly loamy sand, very gravelly sand.	SP, SP-SM	A-1	---	45-70	50-70	35-60	15-25	0-10	---	NP
	30	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
234*:												
Serene	0-6	Gravelly sandy loam.	SM	A-1, A-2	---	0-5	65-90	55-75	40-55	20-30	15-25	NP-5
	6-14	Gravelly sandy loam, very gravelly loamy sand, very gravelly sandy loam.	GM, SM	A-1	---	0-10	50-70	30-55	20-35	10-20	15-25	NP-5
	14-30	Extremely cobbly coarse sand, extremely cobbly loamy sand, very gravelly sand.	SP, SP-SM	A-1	---	45-70	50-70	35-60	15-25	0-10	---	NP
	30	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
235---------- Shalcar	0-10	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
	10-20	Sapric material.	PT	A-8	0	0	---	---	---	---	---	---
	20-60	Silt loam, silty clay loam, sandy loam.	ML, CL	A-4, A-6, A-7	0	0	100	100	80-100	50-90	25-45	NP-20
236---------- Si	0-11	Silt loam-----	ML	A-4	0	0	100	100	90-100	75-90	15-25	NP-5
	11-22	Silt loam-----	ML	A-4	0	0	100	100	90-100	75-90	15-25	NP-5
	22-60	Stratified silt loam to fine sandy loam.	ML, SM	A-4	0	0	100	90-100	75-90	45-80	15-20	NP-5
237, 238------ Skykomish	0-10	Gravelly sandy loam.	SM	A-1, A-2	---	0-10	65-85	50-75	20-35	15-30	40-50	NP-5
	10-15	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	---	5-10	40-55	35-50	20-45	10-30	30-40	NP-5
	15-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very gravelly loamy sand.	GP, GP-GM	A-1	---	5-30	25-50	10-40	5-25	0-10	---	NP
239---------- Skykomish	0-10	Gravelly sandy loam.	SM	A-1, A-2	---	0-10	65-85	50-75	20-35	15-30	40-50	NP-5
	10-15	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	---	5-10	40-55	35-50	20-45	10-30	30-40	NP-5
	15-60	Extremely gravelly coarse sand, extremely gravelly loamy sand, very gravelly loamy sand.	GP, GP-GM	A-1	---	5-30	25-50	10-40	5-25	0-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
240---------- Skykomish	0-5	Very stony loam.	SM, GM	A-2, A-5	---	25-40	60-85	45-75	35-55	25-40	40-50	NP-5
	5-22	Very stony loam, very stony sandy loam.	SM, GM	A-4, A-2, A-1	---	35-50	55-85	40-75	30-65	20-45	30-40	NP-5
	22-60	Very stony sand, extremely stony sand, extremely stony loamy sand.	GM, GP-GM, GP, SM	A-1	---	35-50	30-65	15-55	10-35	0-15	---	NP
241---------- Snoqualmie	0-8	Loamy fine sand.	SM	A-2	0	0	85-100	75-100	60-80	15-30	---	NP
	8-36	Extremely gravelly coarse sand, extremely cobbly fine sand, very gravelly loamy fine sand.	GP, SP	A-1	---	20-55	40-55	30-50	10-30	0-5	---	NP
	36-60	Extremely cobbly coarse sand, extremely gravelly coarse sand, very gravelly sand.	GP, SP	A-1	---	20-55	35-55	25-45	10-20	0-5	---	NP
242---------- Snoqualmie	0-8	Loamy fine sand.	SM	A-2	0	0	85-100	75-100	60-80	15-30	---	NP
	8-36	Extremely gravelly coarse sand, extremely cobbly fine sand, very gravelly loamy fine sand.	GP, SP	A-1	---	20-55	40-55	30-50	10-30	0-5	---	NP
	36-60	Extremely cobbly coarse sand, extremely gravelly coarse sand, very gravelly sand.	GP, SP	A-1	---	20-55	35-55	25-45	10-20	0-5	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
243---------- Spukwush	0-7	Loamy sand----	SM	A-1, A-2	---	0-5	95-100	80-90	45-65	15-25	---	NP
	7-15	Cindery sandy loam, very cindery sandy loam.	SM	A-1	---	0-5	65-90	45-75	30-45	15-20	20-25	NP-5
	15-36	Loam----------	CL	A-6	---	0-5	90-100	75-90	70-85	50-65	30-35	10-15
	36-60	Gravelly loam, loam.	CL, SC	A-6	---	0-5	85-95	60-90	55-85	45-65	30-35	10-15
244---------- Stahl	0-8	Very gravelly silt loam.	GM, SM	A-2	0	0	50-70	30-50	25-45	20-35	40-60	5-20
	8-15	Extremely gravelly silt loam, very gravelly silty clay loam, very gravelly silt loam.	GM	A-2	---	10-25	40-60	15-40	15-40	10-35	40-60	5-20
	15-29	Extremely cobbly silty clay loam, extremely cobbly silt loam, extremely gravelly silt loam.	GM	A-2	---	30-55	40-60	15-35	15-30	10-30	40-60	5-20
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
245---------- Stahl	0-7	Very gravelly silt loam.	GM, SM	A-2	0	0	50-70	30-50	25-45	20-35	40-60	5-20
	7-17	Extremely gravelly silt loam, very gravelly silty clay loam, very gravelly silt loam.	GM	A-2	---	10-25	40-60	15-40	15-40	10-35	40-60	5-20
	17-35	Extremely cobbly silty clay loam, extremely cobbly silt loam, extremely gravelly silt loam.	GM	A-2	---	30-55	40-60	15-35	15-30	10-30	40-60	5-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
246---------- Stahl	0-7	Very gravelly silt loam.	GM, SM	A-2	0	0	50-70	30-50	25-45	20-35	40-60	5-20
	7-17	Extremely gravelly silt loam, very gravelly silty clay loam, very gravelly silt loam.	GM	A-2	---	10-25	40-60	15-40	15-40	10-35	40-60	5-20
	17-35	Extremely cobbly silty clay loam, extremely cobbly silt loam, extremely gravelly silt loam.	GM	A-2	---	30-55	40-60	15-35	15-30	10-30	40-60	5-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
247---------- Sulsavar	0-28	Loam----------	ML, SM	A-4	0	0	85-100	75-95	60-75	40-60	20-30	NP-5
	28-51	Gravelly sandy loam, sandy loam, loam.	SM, ML	A-1, A-2, A-4	---	0-5	65-85	55-85	35-65	20-55	20-30	NP-5
	51-60	Very gravelly loamy sand, loam, very gravelly loam.	GM, SM	A-1, A-2, A-4	---	0-5	35-80	30-75	15-65	10-40	20-25	NP-5
248---------- Sultan	0-9	Silt loam-----	ML	A-4	0	0	100	100	80-90	70-80	20-30	NP-5
	9-48	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	80-90	25-35	5-15
	48-60	Stratified silt loam to sand.	SM	A-4, A-2	0	0	100	100	80-95	30-50	15-20	NP-5
249, 250, 251- Teneriffe	0-7	Loamy sand----	SM	A-1, A-2	0	0	90-100	80-95	45-65	20-30	---	NP
	7-11	Loamy sand, gravelly loamy sand.	SM	A-1, A-2	0	0	65-90	55-85	40-60	15-25	---	NP
	11-21	Very gravelly loamy sand, gravelly loamy sand.	SM, GM	A-1	---	0-10	55-70	45-60	30-40	15-20	---	NP
	21-37	Very gravelly loamy sand.	SM, GM	A-1	---	0-20	50-70	30-50	20-35	10-15	---	NP
	37-60	Very gravelly coarse sand, very gravelly loamy sand, extremely gravelly sand.	SP, GP, GP-GM, SP-SM	A-1	---	0-20	35-60	20-35	5-20	0-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
252, 253------ Teneriffe	0-6	Very gravelly sandy loam.	GM	A-1	---	0-10	40-60	30-50	15-35	10-25	20-30	NP-5
	6-11	Very gravelly loamy sand, gravelly loamy sand.	SM, GM	A-1	---	0-10	55-70	45-60	30-40	10-15	---	NP
	11-47	Very channery loamy sand, extremely channery loamy sand.	GP-GM, SP-SM	A-1	---	0-20	40-70	20-50	15-35	5-10	---	NP
	47	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
254, 255, 256, 257---------- Tokul	0-3	Gravelly loam	SM, GM	A-4	---	0-5	60-80	55-75	50-65	35-45	30-40	NP-5
	3-31	Gravelly loam, gravelly silt loam, gravelly fine sandy loam.	SM, GM	A-2, A-4	---	0-15	60-80	60-75	40-65	25-50	30-40	NP-5
	31-37	Gravelly fine sandy loam, gravelly loam.	SM, GM	A-1, A-2, A-4	---	0-5	55-80	50-75	35-60	20-40	30-40	NP-5
	37	Cemented material.	---	---	---	---	---	---	---	---	---	---
258*: Tokul--------	0-3	Gravelly loam	SM, GM	A-4	---	0-5	60-80	55-75	50-65	35-45	30-40	NP-5
	3-31	Gravelly loam, gravelly silt loam, gravelly fine sandy loam.	SM, GM	A-2, A-4	---	0-15	60-80	60-75	40-65	25-50	30-40	NP-5
	31-37	Gravelly fine sandy loam, gravelly loam.	SM, GM	A-1, A-2, A-4	---	0-5	55-80	50-75	35-60	20-40	30-40	NP-5
	37	Cemented material.	---	---	---	---	---	---	---	---	---	---
Pastik-------	0-6	Silt loam-----	ML	A-4, A-5	0	0	100	100	85-100	75-90	35-45	5-10
	6-31	Silt loam, loam, very fine sandy loam.	ML	A-4, A-5	0	0	100	100	85-100	70-80	35-45	5-10
	31-60	Silt loam, silty clay loam.	ML	A-4, A-6	0	0	100	100	80-90	70-90	30-40	5-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
259*:												
Tokul--------	0-3	Gravelly loam	SM, GM	A-4	---	0-5	60-80	55-75	50-65	35-45	30-40	NP-5
	3-31	Gravelly loam, gravelly silt loam, gravelly fine sandy loam.	SM, GM	A-2, A-4	---	0-15	60-80	60-75	40-65	25-50	30-40	NP-5
	31-37	Gravelly fine sandy loam, gravelly loam.	SM, GM	A-1, A-2, A-4	---	0-5	55-80	50-75	35-60	20-40	30-40	NP-5
	37	Cemented material.	---	---	---	---	---	---	---	---	---	---
Pastik-------	0-6	Silt loam-----	ML	A-4, A-5	0	0	100	100	85-100	75-90	35-45	5-10
	6-31	Silt loam, loam, very fine sandy loam.	ML	A-4, A-5	0	0	100	100	85-100	70-80	35-45	5-10
	31-60	Silt loam, silty clay loam, very fine sandy loam.	ML	A-4, A-6	0	0	100	100	80-90	70-90	30-40	5-15
260----------	0-5	Loam----------	CL-ML	A-4	0	0	95-100	80-90	70-85	50-65	20-30	5-10
Treen	5-14	Sandy loam, gravelly sandy loam, loam.	SC-SM, CL-ML	A-2, A-4	0	0	90-100	65-90	40-80	30-60	15-25	5-10
	14-18	Gravelly sandy loam, loam, gravelly fine sandy loam.	SM	A-2, A-1	0	0-10	70-90	55-80	40-55	20-30	15-20	NP-5
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
261----------	0-41	Muck----------	PT	A-8	0	0	---	---	---	---	---	---
Tukwila	41-60	Stratified diatomaceous earth to sapric material.	PT	A-8	0	0	---	---	---	---	---	---
262, 263------	0-6	Sandy loam----	SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	15-25	NP-5
Tusip	6-15	Sandy loam, loamy sand.	SM	A-2	0	0	90-100	80-95	50-65	15-30	---	NP
	15-38	Gravelly sandy loam, gravelly fine sandy loam.	SM	A-2, A-1	0	0	70-85	55-75	40-55	20-35	30-40	NP-10
	38-43	Very gravelly sandy loam, very gravelly fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-1	0	0	50-70	40-60	25-45	15-30	30-40	NP-10
	43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
264---------- Typic Haplorthods	0-3	Very gravelly loam.	GM	A-1, A-2	---	0-5	50-60	30-50	25-40	20-30	30-40	NP-10
	3-45	Very gravelly loam, very gravelly sandy loam.	GM	A-1	---	0-5	50-60	30-50	20-30	10-25	30-40	NP-10
	45	Cemented material.	---	---	---	---	---	---	---	---	---	---
265, 266------ Typic Udifluvents	0-5	Silt loam-----	ML	A-4, A-6	0	0	100	100	90-100	80-90	25-40	NP-15
	5-16	Silt loam, fine sandy loam.	SM, ML, CL-ML, SC-SM	A-4, A-6	0	0	95-100	85-100	70-100	40-90	15-40	NP-15
	16-60	Stratified fine sandy loam to gravelly coarse sand.	SM	A-1, A-2, A-4	---	0-5	75-100	65-95	35-70	10-40	---	NP
267---------- Udifluvents	0-6	Gravelly sandy loam.	SM	A-2, A-1	---	5-15	75-90	60-80	35-50	20-35	15-20	NP-5
	6-21	Gravelly loamy sand, very gravelly loamy sand, gravelly sand.	GP, GP-GM, SP, SP-SM	A-1	---	5-15	30-65	20-50	10-30	0-15	---	NP
	21-60	Stratified sandy clay loam to extremely gravelly sandy loam.	GM, SC-SM, SM, GM-GC	A-1, A-2	---	5-30	40-75	25-50	20-40	10-25	15-25	NP-10
268, 269------ Vailton	0-10	Silt loam-----	ML, MH	A-5, A-7	0	0	100	100	90-100	70-90	45-65	5-20
	10-37	Silty clay loam, silt loam.	ML, MH	A-5, A-7	0	0	100	100	85-100	75-95	40-60	5-20
	37-43	Silty clay loam, clay loam.	ML, MH	A-7, A-5	0	0	100	100	90-100	70-95	40-60	5-20
	43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
270, 271, 272- Voight	0-11	Silt loam-----	CL-ML, ML	A-4	---	0-5	90-100	75-100	70-100	55-90	25-35	5-10
	11-43	Gravelly silty clay loam, silty clay loam, clay loam.	CL, SC, SM, MH	A-7	---	0-10	70-95	60-90	50-85	40-80	40-60	15-25
	43-58	Gravelly loam, silty clay loam, gravelly silt loam.	CL, SC, GC	A-6, A-7	---	0-10	70-95	60-90	50-85	40-80	30-45	10-20
	58-60	Gravelly loam, silt loam, gravelly silt loam.	CL-ML, GM-GC, CL, SC-SM	A-4, A-6	---	0-10	65-95	50-90	45-80	35-70	25-35	5-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
273, 274------ Welcome	0-5	Loam----------	SM, ML	A-4	0	0	95-100	90-100	65-90	45-75	25-35	NP-5
	5-35	Loam, silt loam, gravelly loam.	SM, ML	A-4	0	0	80-100	70-100	60-90	45-80	25-35	NP-5
	35-53	Sandy loam, fine sandy loam, gravelly sandy loam.	SM	A-2	---	0-5	75-100	65-100	45-75	25-35	20-30	NP-5
	53	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
275, 276, 277- Wilkeson	0-8	Gravelly silt loam.	CL-ML, ML	A-4	---	0-5	70-80	60-75	60-75	50-65	20-30	NP-10
	8-16	Gravelly silt loam, gravelly loam, loam.	CL-ML, CL	A-4, A-6	---	0-10	80-95	65-90	65-90	55-85	25-35	5-15
	16-34	Gravelly loam, loam, gravelly silty clay loam.	CL, GC, SC	A-6	---	0-5	70-95	60-90	50-85	45-65	30-40	10-20
	34-60	Gravelly loam, loam, gravelly clay loam.	CL-ML, CL, GC, GM-GC	A-4, A-6	---	0-5	65-85	55-80	50-70	40-60	25-40	5-20
278, 279, 280- Winston	0-11	Loam----------	ML, MH	A-4, A-5, A-7	0	0	95-100	85-95	75-85	55-80	35-60	NP-20
	11-21	Loam, gravelly loam, gravelly fine sandy loam.	ML, GM, SM, MH	A-4, A-2, A-5, A-7	---	0-5	60-95	55-90	40-80	25-60	30-60	NP-20
	21-34	Gravelly silt loam, loam, gravelly fine sandy loam.	ML, GM, SM, MH	A-4, A-2, A-5, A-7	---	0-5	60-95	55-90	40-80	25-60	30-60	NP-20
	34-60	Very gravelly sand, extremely gravelly coarse sand, extremely gravelly sand.	GP	A-1	---	5-15	10-40	5-35	5-20	0-5	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
281---------- Woodinville	0-7	Silt loam-----	ML	A-4	0	0	100	100	80-95	75-90	30-40	5-10
	7-15	Silt loam, silty clay loam.	ML	A-4	0	0	100	100	85-100	80-95	30-40	5-10
	15-60	Stratified silt loam to sapric material.	ML, PT, OL	A-4, A-8, A-5	0	0	100	100	85-100	80-95	35-45	5-10
282, 283------ Zynbar	0-18	Loam----------	ML, MH	A-5, A-7	---	0-5	85-100	75-95	60-70	50-60	45-70	5-20
	18-41	Gravelly silt loam, gravelly loam.	ML, MH	A-5, A-7	---	0-5	75-95	55-75	55-75	50-75	45-70	5-20
	41-60	Silt loam, loam.	ML, MH	A-5, A-7	---	0-5	90-100	70-95	60-90	50-80	45-70	5-20
284---------- Zynbar	0-9	Silt loam-----	ML, MH	A-4, A-5, A-7	---	0-5	85-95	75-90	60-85	50-80	35-60	NP-20
	9-29	Silt loam, gravelly silt loam.	ML, SM, MH	A-4, A-5, A-7, A-6	---	0-5	75-95	60-90	55-85	45-80	35-60	5-25
	29-60	Very gravelly silt loam, very gravelly loam, extremely stony silt loam.	GM	A-2, A-4, A-5, A-7	---	15-55	50-65	30-60	30-55	25-45	35-60	NP-20

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
1, 2----------	0-6	5-10	1.15-1.35	0.6-2.0	0.19-0.21	5.1-6.5	Low----------	0.32	2	3-10
Alderwood	6-33	5-10	1.25-1.45	2.0-6.0	0.06-0.10	5.1-6.5	Low----------	0.10		
	33	---	---	---	---	---	----------	----		
3----------	0-7	5-10	0.65-0.95	2.0-6.0	0.12-0.15	5.1-6.0	Low----------	0.24	2	5-10
Alkiridge	7-18	5-10	0.65-1.10	2.0-6.0	0.09-0.12	5.1-6.0	Low----------	0.10		
	18-37	5-15	0.85-1.20	0.6-2.0	0.10-0.15	5.6-6.5	Low----------	0.10		
	37	---	---	---	---	---	----------	----		
4, 5, 6----------	0-6	---	0.75-1.10	2.0-6.0	0.08-0.11	4.5-5.5	Low----------	0.15	3	5-10
Altapeak	6-16	---	0.85-1.15	2.0-6.0	0.07-0.10	5.1-6.5	Low----------	0.10		
	16-24	---	0.85-1.20	2.0-6.0	0.03-0.07	5.1-6.5	Low----------	0.05		
	24-50	---	0.95-1.40	6.0-20	0.02-0.04	5.1-6.5	Low----------	0.02		
	50	---	---	---	---	---	----------	----		
7*:										
Altapeak--------	0-6	---	0.75-1.10	2.0-6.0	0.08-0.11	4.5-5.5	Low----------	0.15	3	5-10
	6-16	---	0.85-1.15	2.0-6.0	0.07-0.10	5.1-6.5	Low----------	0.10		
	16-24	---	0.85-1.20	2.0-6.0	0.03-0.07	5.1-6.5	Low----------	0.05		
	24-50	---	0.95-1.40	6.0-20	0.02-0.04	5.1-6.5	Low----------	0.02		
	50	---	---	---	---	---	----------	----		
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
8----------	0-5	---	0.65-0.95	2.0-6.0	0.12-0.14	5.1-5.5	Low----------	0.10	2	2-8
Andic	5-16	5-10	0.65-1.15	2.0-6.0	0.08-0.12	5.1-5.5	Low----------	0.10		
Cryumbrepts	16-44	5-10	0.85-1.20	2.0-6.0	0.03-0.07	5.1-5.5	Low----------	0.05		
	44	---	---	---	---	---	----------	----		
9----------	0-35	10-15	0.85-1.40	2.0-6.0	0.11-0.15	5.6-6.5	Low----------	0.20	5	0-2
Arents	35-60	0-5	1.30-1.70	2.0-20	0.02-0.05	5.6-6.5	Low----------	0.02		
10, 11, 12--------	0-9	---	0.85-1.15	2.0-6.0	0.15-0.20	5.1-6.0	Low----------	0.15	1	2-8
Barneston	9-14	---	0.90-1.20	2.0-6.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	14-60	0-3	1.50-1.70	>20	0.03-0.05	5.1-6.0	Low----------	0.05		
13, 14, 15, 16---	0-9	---	0.85-1.15	2.0-6.0	0.15-0.20	5.1-6.0	Low----------	0.15	1	2-8
Barneston	9-17	---	0.90-1.20	2.0-6.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	17-60	0-3	1.50-1.70	>20	0.03-0.05	5.1-6.0	Low----------	0.05		
17, 18, 19-------	0-5	10-18	1.15-1.35	0.6-2.0	0.12-0.15	5.6-6.0	Low----------	0.20	2	2-8
Beausite	5-11	5-15	1.35-1.55	0.6-2.0	0.07-0.12	5.6-6.5	Low----------	0.05		
	11-36	5-15	1.35-1.55	0.6-2.0	0.05-0.10	5.6-6.5	Low----------	0.05		
	36	---	---	---	---	---	----------	----		
20----------	0-7	5-15	1.15-1.35	0.6-2.0	0.22-0.24	5.6-6.5	Low----------	0.32	5	5-10
Belfast	7-38	5-15	1.30-1.50	0.6-2.0	0.19-0.21	5.6-6.5	Low----------	0.37		
	38-60	5-15	1.30-1.50	0.6-2.0	0.18-0.20	5.6-6.5	Low----------	0.43		
21, 22----------	0-6	---	0.65-0.85	6.0-20	0.08-0.12	5.1-6.5	Low----------	0.05	3	5-10
Bellicum	6-21	---	0.65-0.85	>20	0.07-0.11	5.1-6.5	Low----------	0.05		
	21-39	---	0.65-0.85	0.6-2.0	0.10-0.15	5.1-6.5	Low----------	0.10		
	39-52	---	0.65-0.85	0.6-2.0	0.05-0.10	5.1-6.5	Low----------	0.05		
	52	---	---	---	---	---	----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
23, 24----------	0-5	7-15	0.90-1.10	0.6-2.0	0.15-0.20	5.1-6.5	Low----------	0.24	5	3-9
Blethen	5-24	5-10	1.00-1.20	0.6-2.0	0.10-0.15	5.1-6.5	Low----------	0.15		
	24-42	5-10	1.00-1.20	0.6-2.0	0.10-0.15	5.1-6.5	Low----------	0.10		
	42-60	5-10	1.10-1.30	0.6-2.0	0.10-0.15	5.1-6.5	Low----------	0.10		
25----------	0-4	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low----------	0.02	5	40-80
Borohemists	4-30	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low----------	0.02		
	30-60	---	---	---	---	---	----------	----		
26----------	0-4	---	0.60-0.90	2.0-6.0	0.11-0.15	5.1-6.5	Low----------	0.10	5	4-10
Bromo	4-32	---	0.60-0.90	>20	0.06-0.10	5.6-6.5	Low----------	0.02		
	32-60	---	0.85-1.30	0.6-2.0	0.13-0.25	5.6-6.5	Low----------	0.28		
27, 28----------	0-7	---	0.60-0.85	6.0-20	0.08-0.12	5.6-6.5	Low----------	0.10	3	3-8
Cattcreek	7-11	---	0.65-0.90	6.0-20	0.07-0.11	5.6-6.5	Low----------	0.05		
	11-21	---	0.65-1.00	>20	0.06-0.10	5.6-6.5	Low----------	0.02		
	21-60	---	0.75-1.20	0.6-2.0	0.05-0.10	5.6-6.5	Low----------	0.05		
29, 30----------	0-7	---	0.60-0.85	6.0-20	0.05-0.10	5.6-6.5	Low----------	0.10	3	3-8
Cattcreek	7-31	---	0.65-0.90	>20	0.03-0.08	5.6-6.5	Low----------	0.05		
	31-60	---	0.75-1.20	2.0-6.0	0.05-0.10	5.6-6.5	Low----------	0.05		
31----------	0-8	---	0.60-0.85	6.0-20	0.07-0.11	5.6-6.5	Low----------	0.05	4	3-8
Cattcreek	8-17	---	0.65-0.90	6.0-20	0.06-0.11	5.6-6.5	Low----------	0.02		
	17-50	---	1.30-1.60	0.6-2.0	0.03-0.07	5.6-6.5	Low----------	0.05		
	50	---	---	---	---	---	----------	----		
32, 33----------	0-13	---	0.60-0.85	2.0-6.0	0.10-0.13	4.5-6.0	Low----------	0.24	5	3-8
Cayuse	13-30	---	0.65-0.85	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.24		
	30-36	---	0.70-1.10	0.6-2.0	0.09-0.13	4.5-6.0	Low----------	0.20		
	36-60	---	0.85-1.30	0.6-2.0	0.06-0.10	4.5-6.0	Low----------	0.10		
34, 35, 36, 37, 38----------	0-8	5-15	0.60-0.85	2.0-6.0	0.10-0.12	4.5-5.5	Low----------	0.20	2	10-15
Chinkmin	8-15	5-15	0.60-1.10	0.6-2.0	0.11-0.14	5.1-5.5	Low----------	0.20		
	15-22	5-15	0.60-1.10	0.6-2.0	0.06-0.10	5.1-5.5	Low----------	0.10		
	22-32	5-15	0.60-1.10	0.6-2.0	0.06-0.10	5.1-5.5	Low----------	0.10		
	32	---	---	---	---	---	----------	----		
39, 40----------	0-12	---	0.85-1.10	6.0-20	0.08-0.10	5.1-6.0	Low----------	0.20	5	4-10
Christoff	12-26	10-20	0.95-1.30	0.6-2.0	0.14-0.17	5.6-6.0	Moderate-----	0.37		
	26-60	25-35	0.95-1.35	0.2-0.6	0.16-0.18	5.6-6.0	Moderate-----	0.32		
41, 42, 43-------	0-8	7-15	0.85-1.10	0.6-2.0	0.20-0.25	5.1-6.0	Low----------	0.32	3	2-8
Chuckanut	8-35	5-15	0.95-1.20	0.6-2.0	0.12-0.20	5.1-6.0	Low----------	0.20		
	35-50	5-15	1.10-1.30	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.20		
	50	---	---	---	---	---	----------	----		
44, 45, 46-------	0-10	---	0.65-0.85	0.6-2.0	0.30-0.40	4.5-7.3	Low----------	0.28	5	3-9
Cinebar	10-54	---	0.65-0.85	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32		
	54-60	---	0.65-1.00	0.6-2.0	0.20-0.30	5.1-7.3	Low----------	0.32		
47----------	0-9	---	0.60-0.80	2.0-6.0	0.11-0.15	4.5-7.3	Low----------	0.10	5	3-8
Cotteral	9-32	---	0.65-0.85	2.0-6.0	0.11-0.15	5.1-7.3	Low----------	0.05		
	32-60	---	0.65-0.95	0.6-2.0	0.18-0.21	5.6-7.3	Low----------	0.32		
48----------	0-3	---	0.60-0.80	2.0-6.0	0.11-0.15	4.5-7.3	Low----------	0.10	5	3-8
Cotteral	3-14	---	0.65-0.85	2.0-6.0	0.11-0.15	5.1-7.3	Low----------	0.05		
	14-60	---	0.65-0.95	0.6-2.0	0.18-0.21	5.6-7.3	Low----------	0.32		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
49----------	0-5	7-15	0.90-1.15	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.17	2	5-10
Crinker	5-32	7-15	1.00-1.20	0.6-2.0	0.10-0.18	5.1-6.0	Low----------	0.05		
	32	---	---	---	---	---	----------	----		
50----------	0-5	5-10	0.85-1.20	2.0-6.0	0.08-0.11	4.5-5.5	Low----------	0.10	5	.5-3
Cryofluvents	5-9	1-10	0.95-1.50	0.6-6.0	0.08-0.14	4.5-6.0	Low----------	0.10		
	9-49	1-5	1.00-1.70	2.0-20	0.03-0.05	5.1-6.5	Low----------	0.05		
	49	---	---	---	---	---	----------	----		
51----------	0-6	---	---	0.6-2.0	0.25-0.30	4.5-6.0	Low----------	0.00	5	30-60
Cryohemists	6-28	---	---	0.6-2.0	0.25-0.30	6.1-6.5	Low----------	0.00		
	28-60	10-30	---	0.2-0.6	0.15-0.20	6.1-6.5	Low----------	0.32		
52----------	0-10	---	0.65-0.90	0.6-2.0	0.17-0.25	5.6-6.5	Low----------	0.24	2	4-15
Dobbs	10-35	---	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low----------	0.15		
	35	---	---	---	---	---	----------	----		
53----------	0-8	5-10	1.20-1.40	2.0-6.0	0.16-0.19	4.5-6.0	Low----------	0.37	3	3-5
Edgewick	8-20	5-10	1.30-1.50	2.0-6.0	0.10-0.14	5.6-6.5	Low----------	0.28		
	20-46	5-10	1.30-1.50	0.6-2.0	0.07-0.13	6.1-7.3	Low----------	0.32		
	46-60	0-20	1.50-1.65	>20	0.02-0.05	6.1-7.3	Low----------	0.05		
54, 55----------	0-8	5-18	0.85-1.10	0.6-2.0	0.30-0.40	3.6-5.5	Low----------	0.28	2	10-15
Elwell	8-35	5-18	0.85-1.10	0.6-2.0	0.15-0.25	5.1-5.5	Low----------	0.20		
	35	---	---	---	---	---	----------	----		
56, 57----------	0-7	---	0.60-0.85	6.0-20	0.08-0.12	4.5-6.0	Low----------	0.10	5	10-15
Ethania	7-31	---	0.60-0.95	>20	0.08-0.12	5.1-6.0	Low----------	0.10		
	31-60	---	0.60-1.00	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
58, 59----------	0-6	---	0.60-0.85	6.0-20	0.08-0.12	4.5-6.0	Low----------	0.10	5	10-15
Ethania	6-14	---	0.60-0.95	>20	0.08-0.12	5.1-6.0	Low----------	0.10		
	14-36	---	0.60-1.00	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	36-60	---	0.85-1.25	2.0-6.0	0.05-0.10	5.1-6.0	Low----------	0.05		
60----------	0-8	---	0.60-0.85	6.0-20	0.08-0.12	4.5-6.0	Low----------	0.10	3	10-15
Ethania	8-15	---	0.60-0.85	>20	0.08-0.12	5.1-6.0	Low----------	0.10		
	15-41	---	0.85-1.15	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	41	---	---	---	---	---	----------	----		
61, 62----------	0-4	---	0.60-0.85	0.6-2.0	0.15-0.20	5.1-6.0	Low----------	0.10	5	10-15
Foss	4-16	---	0.60-0.85	0.6-2.0	0.15-0.20	5.1-6.0	Low----------	0.24		
	16-60	---	0.60-1.10	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.15		
63, 64----------	0-5	7-18	0.85-1.00	0.6-2.0	0.20-0.25	3.6-5.5	Low----------	0.32	5	10-15
Gallup	5-14	5-18	0.85-1.00	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.24		
	14-41	5-18	0.95-1.10	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.20		
	41-60	5-18	1.00-1.20	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.20		
65----------	0-7	7-18	0.85-1.00	0.6-2.0	0.20-0.25	3.6-5.5	Low----------	0.32	5	10-15
Gallup	7-15	5-18	0.85-1.00	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.24		
	15-36	5-18	0.95-1.10	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.20		
	36-60	5-18	1.00-1.20	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.20		
66, 67, 68-------	0-7	---	0.60-1.00	0.6-2.0	0.25-0.35	3.6-5.0	Low----------	0.28	2	10-15
Getchell	7-19	---	0.60-1.00	0.6-2.0	0.20-0.30	3.6-5.5	Low----------	0.24		
	19-30	---	0.60-1.00	0.6-2.0	0.18-0.25	4.5-5.5	Low----------	0.28		
	30	---	---	---	---	---	----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
69----------	0-5	0-5	1.25-1.45	6.0-20	0.06-0.08	5.1-6.5	Low----------	0.17	5	1-5
Greenwater	5-17	0-5	1.40-1.60	6.0-20	0.06-0.08	5.1-6.5	Low----------	0.17		
	17-51	0-5	1.45-1.65	6.0-20	0.05-0.07	5.6-6.5	Low----------	0.10		
	51-60	0-5	1.45-1.65	>20	0.03-0.07	5.6-6.5	Low----------	0.05		
70----------	0-5	0-5	1.25-1.45	6.0-20	0.06-0.08	4.5-6.0	Low----------	0.10	5	.5-2
Grotto	5-19	0-5	1.35-1.55	6.0-20	0.06-0.09	4.5-5.5	Low----------	0.17		
	19-36	0-5	1.40-1.65	6.0-20	0.05-0.08	5.6-6.5	Low----------	0.15		
	36-60	0-2	1.45-1.65	>20	0.03-0.05	5.6-6.5	Low----------	0.02		
71----------	0-6	---	0.60-1.00	0.6-2.0	0.25-0.35	3.6-6.0	Low----------	0.24	2	10-15
Hartnit	6-20	---	0.60-1.00	0.6-2.0	0.15-0.25	4.5-6.0	Low----------	0.37		
	20-31	---	0.90-1.10	0.6-2.0	0.10-0.20	4.5-6.0	Low----------	0.24		
	31	---	---	---	---	---	----------	----		
72, 73----------	0-4	2-10	0.60-0.85	2.0-6.0	0.10-0.15	4.5-5.0	Low----------	0.20	2	10-15
Haywire	4-17	5-15	0.60-0.85	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	17-25	5-15	0.75-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	25-36	5-15	0.80-1.20	0.6-2.0	0.08-0.15	5.1-6.0	Low----------	0.10		
	36	---	---	---	---	---	----------	----		
74, 75----------	0-8	2-5	0.60-0.85	2.0-6.0	0.05-0.10	4.5-5.0	Low----------	0.17	2	10-15
Haywire	8-14	5-15	0.75-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	14-30	5-15	0.80-1.20	0.6-2.0	0.08-0.15	5.1-6.0	Low----------	0.10		
	30	---	---	---	---	---	----------	----		
76, 77, 78-------	0-8	---	0.70-1.00	0.6-2.0	0.12-0.17	3.6-5.5	Low----------	0.17	2	10-15
Hinker	8-17	---	0.70-1.00	0.6-2.0	0.15-0.25	3.6-5.5	Low----------	0.05		
	17-38	---	0.70-1.00	0.6-2.0	0.10-0.15	5.1-5.5	Low----------	0.05		
	38	---	---	---	---	---	----------	----		
79----------	0-5	5-15	1.15-1.30	0.6-2.0	0.18-0.22	4.5-6.5	Low----------	0.37	5	5-10
Humaquepts	5-13	5-20	1.25-1.45	0.6-2.0	0.12-0.20	4.5-6.5	Low----------	0.37		
	13-25	5-35	1.20-1.50	0.6-2.0	0.10-0.18	5.1-6.5	Low----------	0.32		
	25-60	5-35	1.20-1.60	0.2-0.6	0.05-0.18	5.1-6.5	Low----------	0.20		
80, 81, 82-------	0-7	---	0.70-1.10	6.0-20	0.08-0.12	4.5-6.0	Low----------	0.15	3	10-15
Index	7-15	---	0.70-1.20	6.0-20	0.05-0.10	5.1-6.0	Low----------	0.10		
	15-23	0-2	1.15-1.40	6.0-20	0.04-0.07	5.1-6.0	Low----------	0.10		
	23-57	0-2	1.30-1.55	>20	0.03-0.05	5.1-6.0	Low----------	0.02		
	57	---	---	---	---	---	----------	----		
83*:										
Index----------	0-7	---	0.70-1.10	6.0-20	0.08-0.12	4.5-6.0	Low----------	0.15	3	10-15
	7-15	---	0.70-1.20	6.0-20	0.05-0.10	5.1-6.0	Low----------	0.10		
	15-23	0-2	1.15-1.40	6.0-20	0.04-0.07	5.1-6.0	Low----------	0.10		
	23-57	0-2	1.30-1.55	>20	0.03-0.05	5.1-6.0	Low----------	0.02		
	57	---	---	---	---	---	----------	----		
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
84, 85----------	0-6	---	0.85-1.00	0.6-2.0	0.20-0.30	5.1-6.0	Moderate-----	0.17	3	5-10
Jonas	6-43	---	0.85-1.15	0.6-2.0	0.10-0.20	5.1-6.0	Moderate-----	0.20		
	43-54	---	0.85-1.15	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.17		
	54	---	---	---	---	---	----------	----		
86, 87, 88-------	0-16	---	0.85-1.00	0.6-2.0	0.20-0.30	5.1-6.0	Low----------	0.17	5	5-10
Jonas	16-60	---	0.85-1.15	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.20		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
89, 90, 91------- Kaleetan	0-4 4-9 9-35 35-60	5-15 5-15 5-15 5-15	0.60-0.85 0.65-0.85 0.65-0.95 0.85-1.35	2.0-6.0 0.6-2.0 0.6-2.0 2.0-6.0	0.15-0.25 0.10-0.15 0.08-0.12 0.05-0.08	4.5-5.0 5.1-5.5 4.5-5.5 5.6-6.0	Low Low Low Low	0.20 0.20 0.10 0.05	5	4-10
92, 93----------- Kaleetan	0-5 5-12 12-23 23-41 41	5-15 5-15 5-15 5-15 ---	0.60-0.85 0.60-0.85 0.65-0.95 0.85-1.35 ---	2.0-6.0 0.6-2.0 0.6-2.0 2.0-6.0 ---	0.15-0.25 0.10-0.15 0.08-0.12 0.05-0.08 ---	4.5-5.0 5.1-5.5 4.5-5.5 5.6-6.0 ---	Low Low Low Low ---	0.20 0.20 0.10 0.05 ----	3	4-10
94, 95----------- Kaleetan	0-6 6-17 17-34 34-60	5-15 5-15 5-15 5-15	0.60-0.85 0.65-0.85 0.65-0.95 0.85-1.35	2.0-6.0 0.6-2.0 0.6-2.0 2.0-6.0	0.15-0.25 0.10-0.15 0.08-0.12 0.05-0.08	4.5-5.0 5.1-5.5 4.5-5.5 5.6-6.0	Low Low Low Low	0.20 0.20 0.10 0.05	5	4-10
96, 97----------- Kanaskat	0-11 11-23 23-38 38-60	5-15 5-15 5-15 5-15	0.85-1.00 0.85-1.10 0.95-1.20 1.00-1.40	2.0-6.0 0.6-2.0 0.6-2.0 2.0-6.0	0.15-0.20 0.10-0.15 0.10-0.15 0.05-0.12	5.1-6.0 5.1-6.0 5.1-6.0 5.1-6.0	Low Low Low Low	0.15 0.10 0.10 0.02	5	3-9
98, 99----------- Kanaskat	0-7 7-18 18-30 30-60	5-15 5-15 5-15 5-15	0.85-1.00 0.85-1.10 0.95-1.20 1.00-1.40	2.0-6.0 0.6-2.0 0.6-2.0 2.0-6.0	0.15-0.20 0.10-0.15 0.10-0.15 0.05-0.12	5.1-6.0 5.1-6.0 5.1-6.0 5.1-6.0	Low Low Low Low	0.15 0.10 0.10 0.02	5	3-9
100, 101, 102---- Kapowsin	0-9 9-24 24-37 37	7-15 7-15 5-15 ---	0.85-1.10 0.85-1.10 1.20-1.40 ---	0.6-2.0 0.6-2.0 0.6-2.0 ---	0.15-0.22 0.18-0.25 0.12-0.18 ---	5.6-6.5 5.1-6.5 5.1-6.5 ---	Low Low Low ---	0.15 0.32 0.24 ----	2	3-9
103, 104, 105---- Kindy	0-6 6-10 10-23 23-32 32	7-15 7-15 7-15 5-15 ---	0.85-1.00 0.85-1.00 0.95-1.20 1.00-1.20 ---	0.6-2.0 0.6-2.0 0.6-2.0 0.6-2.0 ---	0.20-0.35 0.15-0.30 0.15-0.20 0.10-0.20 ---	4.5-5.5 4.5-5.5 4.5-5.5 4.5-5.5 ---	Low Low Low Low ---	0.20 0.15 0.10 0.10 ----	2	5-10
106-------------- Klaber	0-6 6-22 22-60	15-25 25-42 35-42	0.90-1.20 1.10-1.30 1.25-1.45	0.6-2.0 0.2-0.6 0.06-0.2	0.19-0.21 0.19-0.21 0.12-0.14	4.5-5.5 4.5-5.5 5.1-6.0	Low Moderate High	0.32 0.28 0.24	5	1-5
107*: Klaber---------- Cinebar---------	0-6 6-22 22-60 0-10 10-54 54-60	15-25 25-42 35-42 --- --- ---	0.90-1.20 1.10-1.30 1.25-1.45 0.65-0.85 0.65-0.85 0.65-1.00	0.6-2.0 0.2-0.6 0.06-0.2 0.6-2.0 0.6-2.0 0.6-2.0	0.19-0.21 0.19-0.21 0.12-0.14 0.30-0.40 0.25-0.35 0.20-0.30	4.5-5.5 4.5-5.5 5.1-6.0 4.5-7.3 5.1-6.5 5.1-7.3	Low Moderate High Low Low Low	0.32 0.28 0.24 0.28 0.32 0.32	5 5	1-5 3-9
108, 109--------- Klapatche	0-8 8-12 12-20 20-31 31-38 38	1-5 2-10 2-10 0-3 --- ---	0.85-1.10 0.85-1.10 0.85-1.10 0.85-1.10 --- ---	2.0-6.0 2.0-6.0 2.0-6.0 6.0-20 --- ---	0.08-0.12 0.06-0.10 0.04-0.07 0.02-0.04 --- ---	4.5-6.0 5.1-6.0 5.1-6.0 5.1-6.0 --- ---	Low Low Low Low --- ---	0.20 0.15 0.05 0.02 ---- ----	2	10-15

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
110*:										
Klapatche	0-8	1-5	0.85-1.10	2.0-6.0	0.08-0.12	4.5-6.0	Low	0.20	2	10-15
	8-12	2-10	0.85-1.10	2.0-6.0	0.06-0.10	5.1-6.0	Low	0.15		
	12-20	2-10	0.85-1.10	2.0-6.0	0.04-0.07	5.1-6.0	Low	0.05		
	20-31	0-3	0.85-1.10	6.0-20	0.02-0.04	5.1-6.0	Low	0.02		
	31-38	---	---	---	---	---	---	---		
	38	---	---	---	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
111, 112, 113, 114, 115	0-2	2-10	0.80-1.10	2.0-6.0	0.15-0.20	4.5-5.5	Low	0.20	1	5-10
Klaus	2-16	2-10	0.80-1.10	2.0-6.0	0.15-0.20	4.5-5.5	Low	0.20		
	16-28	0-3	1.20-1.40	6.0-20	0.03-0.05	5.1-6.0	Low	0.10		
	28	---	---	---	---	---	---	---		
116, 117	0-6	0-2	0.60-1.00	6.0-20	0.08-0.12	6.1-6.5	Low	0.15	3	3-8
Larrupin	6-24	2-10	0.60-1.10	2.0-6.0	0.06-0.10	6.1-6.5	Low	0.10		
	24-35	3-10	1.10-1.40	0.6-2.0	0.05-0.08	6.1-6.5	Low	0.05		
	35-60	2-10	1.40-1.65	0.6-2.0	0.04-0.08	6.1-6.5	Low	0.02		
118	0-6	---	0.85-1.00	2.0-6.0	0.10-0.12	5.1-6.5	Low	0.10	3	5-10
Larrupin	6-17	---	0.65-0.85	2.0-6.0	0.08-0.10	5.6-6.5	Low	0.10		
	17-35	---	0.90-1.10	0.6-2.0	0.14-0.16	6.1-6.5	Low	0.15		
	35-52	---	0.95-1.30	0.6-2.0	0.10-0.15	6.1-6.5	Low	0.15		
	52	---	---	---	---	---	---	---		
119	0-5	10-20	0.85-1.15	0.6-2.0	0.25-0.35	4.5-5.5	Low	0.37	5	3-15
Lemolo	5-17	10-20	1.00-1.30	0.6-2.0	0.20-0.30	4.5-5.5	Low	0.37		
	17-60	10-30	1.45-1.70	0.06-0.2	0.08-0.10	5.6-6.5	Low	0.10		
120, 121, 122	0-11	5-10	0.75-0.95	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.15	2	4-10
Littlejohn	11-17	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.15		
	17-30	5-15	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.10		
	30	---	---	---	---	---	---	---		
123, 124	0-7	5-10	0.75-0.95	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.15	2	4-10
Littlejohn	7-18	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.15		
	18-27	5-15	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.10		
	27	---	---	---	---	---	---	---		
125	0-11	5-10	0.75-0.95	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.15	2	4-10
Littlejohn	11-17	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.15		
	17-30	5-15	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.10		
	30	---	---	---	---	---	---	---		
126*:										
Littlejohn	0-11	5-10	0.75-0.95	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.15	2	4-10
	11-17	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.15		
	17-30	5-15	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low	0.10		
	30	---	---	---	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
127	0-6	0-5	0.85-1.20	2.0-6.0	0.08-0.11	5.1-6.0	Low	0.24	5	2-6
Lynnwood	6-21	0-5	1.10-1.30	6.0-20	0.07-0.10	5.1-6.5	Low	0.24		
	21-60	0-5	1.25-1.50	6.0-20	0.05-0.08	5.1-7.3	Low	0.17		
128, 129	0-5	0-8	0.85-1.10	6.0-20	0.06-0.10	5.1-6.0	Low	0.10	2	3-8
Marblemount	5-35	0-2	1.40-1.60	2.0-6.0	0.05-0.07	5.1-6.0	Low	0.05		
	35	---	---	---	---	---	---	---		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
130----------	0-7	0-2	0.85-1.10	6.0-20.0	0.06-0.10	5.1-6.0	Low----------	0.10	2	3-8
Marblemount	7-16	0-10	1.30-1.50	6.0-20.0	0.05-0.08	5.1-6.0	Low----------	0.10		
	16-38	0-2	1.40-1.60	6.0-20.0	0.05-0.07	5.1-6.0	Low----------	0.05		
	38	---	---	---	---	---	----------	---		
131*:										
Marblemount-----	0-5	0-8	0.85-1.10	6.0-20	0.06-0.10	5.1-6.0	Low----------	0.10	2	3-8
	5-35	0-2	1.40-1.60	2.0-6.0	0.05-0.07	5.1-6.0	Low----------	0.05		
	35	---	---	---	---	---	----------	---		
Rock outcrop----	0-60	---	---	---	---	---	----------	---	---	---
132, 133---------	0-7	18-27	1.15-1.35	0.6-2.0	0.16-0.20	4.5-6.0	Low----------	0.32	5	3-8
Mashel	7-13	18-27	1.25-1.45	0.6-2.0	0.16-0.19	4.5-6.0	Low----------	0.28		
	13-60	35-45	1.20-1.40	0.2-0.6	0.15-0.18	4.5-6.0	Moderate-----	0.28		
134, 135, 136----	0-7	5-10	0.60-0.85	2.0-6.0	0.15-0.20	4.5-5.0	Low----------	0.28	2	4-10
Melakwa	7-22	5-15	0.60-0.95	0.6-2.0	0.10-0.15	5.1-5.5	Low----------	0.10		
	22-37	5-15	0.85-1.20	0.6-2.0	0.08-0.15	5.1-5.5	Low----------	0.05		
	37	---	---	---	---	---	----------	---		
137----------	0-8	5-10	0.60-0.85	2.0-6.0	0.15-0.20	4.5-5.0	Low----------	0.28	2	4-10
Melakwa	8-18	5-15	0.60-0.95	0.6-2.0	0.10-0.15	5.1-5.5	Low----------	0.10		
	18-31	5-15	0.85-1.20	0.6-2.0	0.08-0.15	5.1-5.5	Low----------	0.05		
	31	---	---	---	---	---	----------	---		
138*:										
Melakwa---------	0-7	5-10	0.60-0.85	2.0-6.0	0.15-0.20	4.5-5.0	Low----------	0.28	2	4-10
	7-22	5-15	0.60-0.95	0.6-2.0	0.10-0.15	5.1-5.5	Low----------	0.10		
	22-37	5-15	0.85-1.20	0.6-2.0	0.08-0.15	5.1-5.5	Low----------	0.05		
	37	---	---	---	---	---	----------	---		
Rock outcrop----	0-60	---	---	---	---	---	----------	---	---	---
139----------	0-7	5-15	0.70-0.85	0.6-2.0	0.30-0.40	4.5-5.5	Low----------	0.28	5	5-10
Mowich	7-26	5-18	0.75-0.85	0.6-2.0	0.25-0.35	4.5-5.5	Low----------	0.32		
	26-60	45-60	1.20-1.35	0.06-0.2	0.15-0.20	4.5-5.5	High---------	0.28		
140----------	0-10	---	---	2.0-6.0	0.40-0.80	4.5-5.0	Low----------	0.00	5	40-80
Mukilteo	10-60	---	---	0.6-2.0	0.32-0.40	4.5-5.0	Low----------	0.00		
141, 142---------	0-4	2-10	0.60-0.90	2.0-6.0	0.15-0.25	5.1-5.5	Low----------	0.17	2	10-15
Nagrom	4-7	2-15	0.60-0.85	0.6-2.0	0.15-0.25	4.5-6.0	Low----------	0.20		
	7-23	2-15	0.60-0.95	0.6-2.0	0.15-0.20	5.6-6.0	Low----------	0.15		
	23-38	5-18	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low----------	0.10		
	38	---	---	---	---	---	----------	---		
143, 144---------	0-4	7-15	0.60-0.85	0.6-2.0	0.15-0.20	4.5-5.5	Low----------	0.17	2	10-15
Nagrom	4-10	5-15	0.60-0.85	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.17		
	10-25	5-15	0.60-0.85	0.6-2.0	0.10-0.15	5.6-6.0	Low----------	0.15		
	25-34	5-18	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low----------	0.10		
	34	---	---	---	---	---	----------	---		
145*:										
Nagrom----------	0-4	2-10	0.60-0.90	2.0-6.0	0.15-0.25	5.1-5.5	Low----------	0.17	2	10-15
	4-7	2-15	0.60-0.85	0.6-2.0	0.15-0.25	4.5-6.0	Low----------	0.20		
	7-23	2-15	0.60-0.95	0.6-2.0	0.15-0.20	5.6-6.0	Low----------	0.15		
	23-38	5-18	0.85-1.15	0.6-2.0	0.10-0.15	5.6-6.0	Low----------	0.10		
	38	---	---	---	---	---	----------	---		
Rock outcrop----	0-60	---	---	---	---	---	----------	---	---	---

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
146, 147---------	0-2	2-10	0.85-0.95	0.6-2.0	0.20-0.25	5.1-6.5	Low----------	0.32	3	3-9
Nargar	2-24	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.24		
	24-60	0-5	1.35-1.55	6.0-20	0.05-0.08	6.1-6.5	Low----------	0.17		
148*:										
Nargar----------	0-2	2-10	0.85-0.95	0.6-2.0	0.20-0.25	5.1-6.5	Low----------	0.32	3	3-9
	2-24	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.24		
	24-60	0-5	1.35-1.55	6.0-20	0.05-0.08	6.1-6.5	Low----------	0.17		
Pastik----------	0-6	---	0.60-0.85	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32	5	10-15
	6-29	---	0.85-1.10	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32		
	29-60	18-30	1.30-1.55	0.06-0.2	0.15-0.20	5.1-6.5	Moderate-----	0.43		
149---------------	0-10	---	0.60-0.85	2.0-6.0	0.11-0.15	5.6-6.5	Low----------	0.15	5	5-10
National	10-28	---	0.60-0.85	6.0-20	0.08-0.12	5.6-6.5	Low----------	0.10		
	28-46	---	0.60-0.85	0.6-2.0	0.14-0.18	5.6-6.5	Low----------	0.24		
	46-60	10-25	0.85-1.10	0.6-2.0	0.12-0.16	5.6-6.5	Low----------	0.20		
150---------------	0-16	0-5	1.25-1.45	6.0-20	0.05-0.07	5.1-6.0	Low----------	0.15	5	2-10
Neilton	16-21	0-5	1.40-1.60	>20	0.03-0.05	5.1-6.0	Low----------	0.05		
	21-60	0-5	1.40-1.60	>20	0.02-0.04	5.6-7.3	Low----------	0.05		
151, 152, 153----	0-5	0-3	0.65-0.85	6.0-20	0.07-0.10	4.5-5.0	Low----------	0.17	5	10-15
Nimue	5-10	2-10	0.65-1.00	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.20		
	10-24	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low----------	0.05		
	24-60	5-15	0.90-1.20	0.6-2.0	0.06-0.10	5.6-6.5	Low----------	0.05		
154, 155---------	0-6	0-3	0.65-0.85	6.0-20	0.07-0.10	4.5-5.0	Low----------	0.17	5	10-15
Nimue	6-15	2-10	0.65-1.00	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.20		
	15-32	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low----------	0.05		
	32-60	5-15	0.90-1.20	0.6-2.0	0.06-0.10	5.6-6.5	Low----------	0.05		
156*:										
Nimue----------	0-5	0-3	0.65-0.85	6.0-20	0.07-0.10	4.5-5.0	Low----------	0.17	5	10-15
	5-10	2-10	0.65-1.00	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.20		
	10-24	5-15	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low----------	0.05		
	24-60	5-15	0.90-1.20	0.6-2.0	0.06-0.10	5.6-6.5	Low----------	0.05		
Rock outcrop----	0-60	---	---	---	---	---	-------------	----	---	---
157---------------	0-11	10-15	1.15-1.35	0.6-2.0	0.18-0.21	5.6-6.5	Low----------	0.37	5	1-5
Nooksack	11-29	10-15	1.30-1.50	0.6-2.0	0.18-0.21	5.6-6.5	Low----------	0.43		
	29-60	10-15	1.30-1.50	0.6-2.0	0.17-0.20	5.6-6.5	Low----------	0.43		
158---------------	0-9	5-15	1.15-1.35	0.6-2.0	0.19-0.21	6.1-6.5	Low----------	0.37	4	3-8
Norma	9-33	5-15	1.30-1.45	2.0-6.0	0.10-0.14	5.6-6.5	Low----------	0.20		
	33-60	2-10	1.25-1.45	2.0-6.0	0.07-0.09	5.6-6.5	Low----------	0.10		
159---------------	0-8	5-15	0.85-1.00	0.6-2.0	0.20-0.30	5.1-6.0	Low----------	0.24	5	4-10
Oakes	8-60	5-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
160---------------	0-6	7-15	0.85-1.00	0.6-2.0	0.15-0.20	5.1-6.0	Low----------	0.20	3	4-10
Oakes	6-44	5-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	44	---	---	---	---	---	-------------	----		
161---------------	0-6	7-15	0.85-1.00	0.6-2.0	0.15-0.20	5.1-6.0	Low----------	0.20	3	4-10
Oakes	6-44	5-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10		
	44	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
162, 163---	0-4	7-15	0.60-0.90	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.20	2	5-10
Ogarty	4-37	5-18	0.85-1.10	0.6-2.0	0.08-0.15	4.5-6.0	Low	0.05		
	37	---	---	---	---	---	---	---		
164*:										
Ogarty---	0-4	7-15	0.60-0.90	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.20	2	5-10
	4-37	5-18	0.85-1.10	0.6-2.0	0.08-0.15	4.5-6.0	Low	0.05		
	37	---	---	---	---	---	---	---		
Rock outcrop---	0-60	---	---	---	---	---	---	---	---	---
165---	0-7	10-20	1.10-1.30	2.0-6.0	0.12-0.16	5.1-6.0	Low	0.24	5	4-10
Ohop	7-16	5-15	1.50-1.80	0.6-2.0	0.05-0.08	5.1-6.0	Low	0.10		
	16-60	5-15	1.30-1.50	0.06-0.2	0.04-0.08	5.1-6.0	Low	0.05		
166---	0-7	15-25	1.15-1.35	0.6-2.0	0.09-0.12	5.1-6.0	Low	0.20	2	4-10
Ohop	7-16	5-15	1.50-1.80	0.6-2.0	0.05-0.08	5.1-6.0	Low	0.10		
	16-60	5-15	1.30-1.50	0.06-0.2	0.04-0.08	5.1-6.0	Low	0.05		
167, 168---	0-6	7-15	0.60-0.85	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.20	2	5-10
Olomount	6-14	5-18	0.85-1.00	0.6-2.0	0.15-0.20	5.6-6.0	Low	0.15		
	14-33	5-18	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low	0.10		
	33	---	---	---	---	---	---	---		
169*:										
Olomount---	0-6	7-15	0.60-0.85	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.20	2	5-10
	6-14	5-18	0.85-1.00	0.6-2.0	0.15-0.20	5.6-6.0	Low	0.15		
	14-33	5-18	0.85-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low	0.10		
	33	---	---	---	---	---	---	---		
Rock outcrop---	0-60	---	---	---	---	---	---	---	---	---
170---	0-11	8-18	1.15-1.25	0.6-2.0	0.19-0.21	5.6-6.5	Low	0.49	5	2-6
Oridia	11-19	8-18	1.15-1.25	0.6-2.0	0.19-0.21	5.6-7.3	Low	0.55		
	19-60	8-35	1.20-1.30	0.6-2.0	0.15-0.20	5.6-7.3	Moderate	0.55		
171*:										
Orthents---	0-6	5-12	1.20-1.40	2.0-6.0	0.05-0.10	5.1-5.5	Low	0.10	2	2-8
	6-24	0-10	1.30-1.50	2.0-20	0.03-0.06	5.1-5.5	Low	0.10		
	24-30	0-10	1.25-1.45	2.0-20	0.03-0.06	5.1-5.5	Low	0.05		
	30	---	---	---	---	---	---	---		
Humods---	0-6	5-12	1.15-1.30	2.0-6.0	0.05-0.10	5.1-5.5	Low	0.10	2	10-15
	6-14	0-10	1.25-1.55	2.0-20	0.03-0.06	5.1-5.5	Low	0.10		
	14-26	0-10	1.25-1.55	2.0-20	0.03-0.06	5.1-5.5	Low	0.05		
	26	---	---	---	---	---	---	---		
172, 173---	0-3	7-15	0.95-1.30	2.0-6.0	0.13-0.15	5.1-6.5	Low	0.17	2	3-8
Ovall	3-24	5-15	1.20-1.40	0.6-2.0	0.08-0.10	5.1-6.5	Low	0.10		
	24	---	---	---	---	---	---	---		
174---	0-6	---	0.60-0.85	0.6-2.0	0.25-0.35	5.1-6.5	Low	0.32	5	10-15
Pastik	6-31	---	0.85-1.10	0.6-2.0	0.25-0.35	5.1-6.5	Low	0.32		
	31-60	18-30	1.30-1.55	0.06-0.2	0.15-0.20	5.1-6.5	Moderate	0.43		
175, 176---	0-4	---	0.85-1.10	0.6-2.0	0.15-0.20	3.6-5.0	Low	0.28	3	4-8
Persis	4-13	---	0.85-1.10	0.6-2.0	0.15-0.25	4.5-5.5	Low	0.28		
	13-29	---	0.85-1.10	0.6-2.0	0.15-0.20	5.1-6.0	Low	0.32		
	29-60	0-5	1.35-1.55	6.0-20	0.04-0.08	5.6-6.0	Low	0.10		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
177, 178---	0-11	---	0.60-0.85	0.6-2.0	0.20-0.30	5.1-6.0	Low	0.17	2	5-10
Pheeney	11-34	---	0.85-1.10	0.6-2.0	0.08-0.15	5.1-6.0	Low	0.05		
	34	---	---	---	---	---	---	---		
179, 180---	0-4	---	0.60-0.85	0.6-2.0	0.20-0.30	5.1-6.0	Low	0.17	2	5-10
Pheeney	4-12	---	0.85-0.95	0.6-2.0	0.20-0.30	5.1-6.0	Low	0.10		
	12-34	---	0.85-1.10	0.6-2.0	0.10-0.15	5.1-6.0	Low	0.05		
	34	---	---	---	---	---	---	---		
181*:										
Pheeney---	0-11	---	0.60-0.85	0.6-2.0	0.20-0.30	5.1-6.0	Low	0.17	2	5-10
	11-34	---	0.85-1.10	0.6-2.0	0.08-0.15	5.1-6.0	Low	0.05		
	34	---	---	---	---	---	---	---		
Rock outcrop---	0-60	---	---	---	---	---	---	---	---	---
182, 183---	0-4	3-10	0.85-1.10	0.6-2.0	0.15-0.20	3.6-5.0	Low	0.32	2	4-10
Philippa	4-9	5-18	0.85-1.10	0.6-2.0	0.20-0.25	4.5-5.0	Low	0.28		
	9-18	5-18	0.85-1.10	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.20		
	18-28	5-18	0.85-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.10		
	28	---	---	---	---	---	---	---		
184---	0-6	5-18	1.10-1.30	2.0-6.0	0.07-0.09	5.1-6.0	Low	0.28	5	5-10
Pierking	6-34	5-18	1.20-1.40	0.2-0.6	0.03-0.08	5.1-6.0	Low	0.10		
	34-60	2-15	1.55-1.75	0.2-0.6	0.03-0.08	5.1-6.5	Low	0.05		
185*:										
Pierking---	0-6	5-18	1.10-1.30	2.0-6.0	0.07-0.09	5.1-6.0	Low	0.28	5	5-10
	6-34	5-18	1.20-1.40	0.2-0.6	0.03-0.08	5.1-6.0	Low	0.10		
	34-60	2-15	1.55-1.75	0.2-0.6	0.03-0.08	5.1-6.5	Low	0.05		
Borohemists---	0-4	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	0.02	5	40-80
	4-30	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	0.02		
	30-60	---	---	---	---	---	---	---		
186*:										
Pierking---	0-6	5-18	1.10-1.30	2.0-6.0	0.07-0.09	5.1-6.0	Low	0.28	5	5-10
	6-34	5-18	1.20-1.40	0.2-0.6	0.03-0.08	5.1-6.0	Low	0.10		
	34-60	2-15	1.55-1.75	0.2-0.6	0.03-0.08	5.1-6.5	Low	0.05		
Mowich---	0-7	5-15	0.70-0.85	0.6-2.0	0.30-0.40	4.5-5.5	Low	0.28	5	5-10
	7-26	5-18	0.75-0.85	0.6-2.0	0.25-0.35	4.5-5.5	Low	0.32		
	26-60	45-60	1.20-1.35	0.06-0.2	0.15-0.20	4.5-5.5	High	0.28		
187---	0-9	0-5	1.50-1.60	6.0-20	0.05-0.07	6.1-7.3	Low	0.10	5	1-2
Pilchuck	9-55	0-5	1.50-1.60	6.0-20	0.05-0.08	5.6-7.3	Low	0.10		
	55-60	0-5	1.60-1.65	>20	0.03-0.05	6.1-7.3	Low	0.05		
188, 189, 190---	0-8	3-10	0.65-0.85	2.0-6.0	0.15-0.20	5.1-6.0	Low	0.28	5	4-10
Pitcher	8-16	3-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.20		
	16-29	3-15	0.85-1.10	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		
	29-60	3-18	0.95-1.30	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		
191, 192, 193---	0-7	3-10	0.65-0.85	2.0-6.0	0.15-0.20	5.1-6.0	Low	0.28	5	4-10
Pitcher	7-13	3-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.20		
	13-29	3-15	0.85-1.10	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		
	29-60	3-18	0.95-1.30	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
194*:										
Pitcher	0-8	3-10	0.65-0.85	2.0-6.0	0.15-0.20	5.1-6.0	Low	0.28	5	4-10
	8-16	3-15	0.85-1.00	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.20		
	16-29	3-15	0.85-1.10	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		
	29-60	3-18	0.95-1.30	0.6-2.0	0.06-0.10	5.6-6.5	Low	0.10		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
195*	0-60	---	---	---	---	---	---	---	---	---
Pits										
196, 197, 198	0-6	2-5	0.80-1.00	6.0-20	0.10-0.15	4.5-5.0	Low	0.17	5	10-15
Playco	6-10	2-10	0.75-1.00	2.0-6.0	0.10-0.20	5.1-6.5	Low	0.10		
	10-36	5-15	0.75-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low	0.10		
	36-60	5-15	0.85-1.20	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.10		
199, 200	0-7	2-5	0.80-1.00	>20	0.03-0.08	4.5-5.5	Low	0.10	5	10-15
Playco	7-17	2-5	0.85-1.10	>20	0.03-0.08	5.1-6.0	Low	0.10		
	17-50	5-15	0.75-1.10	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.10		
	50-60	5-15	0.85-1.30	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.10		
201*:										
Playco	0-6	2-5	0.80-1.00	6.0-20	0.10-0.15	4.5-5.0	Low	0.17	5	10-15
	6-10	2-10	0.75-1.00	2.0-6.0	0.10-0.20	5.1-6.5	Low	0.10		
	10-36	5-15	0.75-1.10	0.6-2.0	0.10-0.15	5.6-6.5	Low	0.10		
	36-60	5-15	0.85-1.20	0.6-2.0	0.10-0.15	5.1-6.5	Low	0.10		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
202	0-7	27-35	1.15-1.25	0.6-2.0	0.19-0.21	5.6-7.3	Moderate	0.28	5	3-9
Puget	7-45	18-35	1.25-1.35	0.2-0.6	0.19-0.21	4.5-6.5	Moderate	0.32		
	45-60	18-45	1.25-1.35	0.06-0.2	0.15-0.19	4.5-6.5	Moderate	0.32		
203, 204	0-13	7-15	0.60-0.90	2.0-6.0	0.25-0.35	5.6-6.5	Low	0.32	3	3-8
Ragnar	13-24	5-15	0.85-1.20	2.0-6.0	0.13-0.15	5.6-6.5	Low	0.24		
	24-60	0-5	1.40-1.60	6.0-20	0.07-0.09	5.6-6.5	Low	0.17		
205*:										
Ragnar	0-13	7-15	0.60-0.90	2.0-6.0	0.25-0.35	5.6-6.5	Low	0.32	3	3-8
	13-24	5-15	0.85-1.20	2.0-6.0	0.13-0.15	5.6-6.5	Low	0.24		
	24-60	0-5	1.40-1.60	6.0-20	0.07-0.09	5.6-6.5	Low	0.17		
Lynnwood	0-6	0-5	0.85-1.20	2.0-6.0	0.08-0.11	5.1-6.0	Low	0.24	5	2-6
	6-26	0-5	1.10-1.30	6.0-20	0.07-0.10	5.1-6.5	Low	0.24		
	26-60	0-5	1.25-1.50	6.0-20	0.05-0.08	5.1-7.3	Low	0.17		
206*:										
Ragnar	0-13	7-15	0.60-0.90	2.0-6.0	0.25-0.35	5.6-6.5	Low	0.32	3	3-8
	13-24	5-15	0.85-1.20	2.0-6.0	0.13-0.15	5.6-6.5	Low	0.24		
	24-60	0-5	1.40-1.60	6.0-20	0.07-0.09	5.6-6.5	Low	0.17		
Lynnwood	0-6	0-5	0.85-1.20	2.0-6.0	0.08-0.11	5.1-6.0	Low	0.24	5	2-6
	6-26	0-5	1.10-1.30	6.0-20	0.07-0.10	5.1-6.5	Low	0.24		
	26-60	0-5	1.25-1.50	6.0-20	0.05-0.08	5.1-7.3	Low	0.17		
207	0-8	---	---	0.6-2.0	0.35-0.45	3.6-5.0	---	---	---	40-80
Reggad	8-17	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	---		
	17-60	---	---	>20	---	---	Low	0.02		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
208*:										
Reggad	0-8	---	---	0.6-2.0	0.35-0.45	3.6-5.0	---	---	---	40-80
	8-17	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	---		
	17-60	---	---	>20	---	---	Low	0.02		
Haywire	0-4	2-10	0.60-0.85	2.0-6.0	0.10-0.15	4.5-5.0	Low	0.20	2	10-15
	4-17	5-15	0.60-0.85	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20		
	17-25	5-15	0.75-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20		
	25-36	5-15	0.80-1.20	0.6-2.0	0.08-0.15	5.1-6.0	Low	0.10		
	36	---	---	---	---	---	---	---		
209*:										
Reggad	0-8	---	---	0.6-2.0	0.35-0.45	3.6-5.0	---	---	---	40-80
	8-17	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	---		
	17-60	---	---	>20	---	---	Low	0.02		
Klapatche	0-8	1-5	0.85-1.10	2.0-6.0	0.08-0.12	4.5-6.0	Low	0.20	2	10-15
	8-12	2-10	0.85-1.10	2.0-6.0	0.06-0.10	5.1-6.0	Low	0.15		
	12-20	2-10	0.85-1.10	2.0-6.0	0.04-0.07	5.1-6.0	Low	0.05		
	20-31	0-3	0.85-1.10	6.0-20	0.02-0.04	5.1-6.0	Low	0.02		
	31-38	---	---	---	---	---	---	---		
	38	---	---	---	---	---	---	---		
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---
210*:										
Reggad	0-8	---	---	0.6-2.0	0.35-0.45	3.6-5.0	---	---	---	40-80
	8-17	---	---	0.6-2.0	0.30-0.40	4.5-6.0	Low	---		
	17-60	---	---	>20	---	---	Low	0.02		
Serene	0-6	2-10	0.70-0.95	2.0-6.0	0.07-0.09	4.5-6.0	Low	0.15	2	10-15
	6-14	2-10	0.75-1.00	2.0-6.0	0.04-0.07	5.1-6.0	Low	0.10		
	14-30	0-2	1.35-1.65	6.0-20	0.03-0.04	5.1-6.0	Low	0.02		
	30	---	---	---	---	---	---	---		
211, 212	0-10	---	0.85-1.10	0.6-2.0	0.25-0.35	4.5-6.0	Low	0.32	3	10-15
Reichel	10-18	---	0.85-1.10	0.6-2.0	0.20-0.35	4.5-6.0	Low	0.28		
	18-28	---	0.85-1.10	0.6-2.0	0.20-0.30	4.5-6.0	Moderate	0.20		
	28-47	---	0.90-1.20	0.6-2.0	0.10-0.15	4.5-6.0	Low	0.10		
	47-51	---	---	---	---	---	---	---		
213, 214	0-14	---	0.85-1.10	0.6-2.0	0.16-0.18	4.5-6.0	Low	0.24	5	10-15
Reichel	14-45	---	0.85-1.10	0.6-2.0	0.13-0.16	4.5-6.0	Low	0.20		
	45-60	---	0.90-1.20	0.6-2.0	0.09-0.12	4.5-6.0	Low	0.10		
215*	0-60	---	---	---	---	---	---	---	---	---
Riverwash										
216, 217	0-6	7-15	0.65-0.85	0.6-2.0	0.20-0.23	5.1-6.0	Low	0.32	5	4-10
Rober	6-30	5-18	0.85-1.10	0.6-2.0	0.15-0.24	5.1-6.5	Low	0.32		
	30-60	10-30	1.20-1.60	0.06-0.2	0.13-0.20	5.6-6.5	Moderate	0.43		
218*	0-60	---	---	---	---	---	---	---	---	---
Rock outcrop										
219*:										
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
219*:										
Cattcreek-------	0-7	---	0.60-0.85	6.0-20	0.08-0.12	5.6-6.5	Low----------	0.10	3	3-8
	7-11	---	0.65-0.90	6.0-20	0.07-0.11	5.6-6.5	Low----------	0.05		
	11-21	---	0.65-1.00	>20	0.06-0.10	5.6-6.5	Low----------	0.02		
	21-60	---	0.75-1.20	0.6-2.0	0.05-0.10	5.6-6.5	Low----------	0.05		
220*:										
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
Cayuse----------	0-13	---	0.60-0.85	2.0-6.0	0.10-0.13	4.5-6.0	Low----------	0.24	5	3-8
	13-30	---	0.65-0.85	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.24		
	30-36	---	0.70-1.10	0.6-2.0	0.09-0.13	4.5-6.0	Low----------	0.20		
	36-60	---	0.85-1.30	0.6-2.0	0.06-0.10	4.5-6.0	Low----------	0.10		
221*:										
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
Haywire---------	0-4	2-10	0.60-0.85	2.0-6.0	0.10-0.15	4.5-5.0	Low----------	0.20	2	10-15
	4-17	5-15	0.60-0.85	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	17-25	5-15	0.75-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	25-36	5-15	0.80-1.20	0.6-2.0	0.08-0.15	5.1-6.0	Low----------	0.10		
	36	---	---	---	---	---	----------	----		
222*:										
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
Rubble land-----	0-60	0	---	>20	0.0-0.1	---	Low----------	----	---	<.1
Haywire---------	0-4	2-10	0.60-0.85	2.0-6.0	0.10-0.15	4.5-5.0	Low----------	0.20	2	10-15
	4-17	5-15	0.60-0.85	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	17-25	5-15	0.75-1.10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20		
	25-36	5-15	0.80-1.20	0.6-2.0	0.08-0.15	5.1-6.0	Low----------	0.10		
	36	---	---	---	---	---	----------	----		
223*:										
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
Rubble land-----	0-60	0	---	>20	0.0-0.1	---	Low----------	----	---	<.1
Serene----------	0-6	2-10	0.70-0.95	2.0-6.0	0.07-0.09	4.5-6.0	Low----------	0.15	2	10-15
	6-14	2-10	0.75-1.00	2.0-6.0	0.04-0.07	5.1-6.0	Low----------	0.10		
	14-30	0-2	1.35-1.65	6.0-20	0.03-0.04	5.1-6.0	Low----------	0.02		
	30	---	---	---	---	---	----------	----		
224*-------------- Rubble land	0-60	0	---	>20	0.0-0.1	---	Low----------	----	---	<.1
225-------------- Rugles	0-11	---	0.65-0.90	0.6-2.0	0.16-0.20	5.1-5.5	Low----------	0.32	5	4-10
	11-57	---	0.85-1.10	0.2-0.6	0.14-0.18	5.1-6.0	Moderate-----	0.28		
	57-60	27-35	1.30-1.50	0.2-0.6	0.14-0.16	5.6-6.0	Moderate-----	0.28		
226-------------- Salal	0-11	10-18	1.10-1.25	0.6-2.0	0.18-0.21	5.1-6.0	Low----------	0.37	5	3-5
	11-50	10-18	1.10-1.35	0.6-2.0	0.18-0.21	5.6-6.0	Low----------	0.43		
	50-60	10-18	1.20-1.45	0.6-2.0	0.18-0.21	5.6-6.0	Low----------	0.43		
227-------------- Sauk	0-6	5-15	0.65-0.85	0.6-2.0	0.25-0.35	5.1-6.0	Low----------	0.28	5	3-8
	6-22	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.0	Low----------	0.32		
	22-42	5-15	0.90-1.20	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.32		
	42-60	0-10	1.50-1.70	6.0-20	0.02-0.07	5.6-6.5	Low----------	0.10		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
228, 229, 230----	0-6	20-27	1.15-1.35	0.6-2.0	0.20-0.24	5.6-7.3	Low----------	0.32	5	3-8
Scamman	6-14	20-35	1.20-1.45	0.6-2.0	0.20-0.24	5.6-7.3	Low----------	0.28		
	14-27	35-45	1.10-1.30	0.6-2.0	0.18-0.22	5.6-6.5	High---------	0.24		
	27-60	40-60	1.10-1.30	0.06-0.2	0.15-0.18	5.1-6.5	High---------	0.24		
231----------	0-8	---	---	0.6-2.0	0.35-0.40	4.5-6.0	Low----------	0.00	5	60-80
Seattle	8-60	---	---	0.6-2.0	0.35-0.40	4.5-6.0	Low----------	0.00		
232, 233---------	0-6	2-10	0.70-0.95	2.0-6.0	0.07-0.09	4.5-6.0	Low----------	0.15	2	10-15
Serene	6-14	2-10	0.75-1.00	2.0-6.0	0.04-0.07	5.1-6.0	Low----------	0.10		
	14-30	0-2	1.35-1.65	6.0-20	0.03-0.04	5.1-6.0	Low----------	0.02		
	30	---	---	---	---	---	----------	----		
234*:										
Serene----------	0-6	2-10	0.70-0.95	2.0-6.0	0.07-0.09	4.5-6.0	Low----------	0.15	2	10-15
	6-14	2-10	0.75-1.00	2.0-6.0	0.04-0.07	5.1-6.0	Low----------	0.10		
	14-30	0-2	1.35-1.65	6.0-20	0.03-0.04	5.1-6.0	Low----------	0.02		
	30	---	---	---	---	---	----------	----		
Rock outcrop----	0-60	---	---	---	---	---	----------	----	---	---
235----------	0-10	---	0.40-0.60	0.6-2.0	0.15-0.25	4.5-6.0	Low----------	----	5	40-90
Shalcar	10-20	---	0.30-0.50	0.6-2.0	0.15-0.25	4.5-6.0	Low----------	----		
	20-60	10-35	1.20-1.35	0.6-2.0	0.19-0.21	5.6-6.5	Low----------	0.49		
236----------	0-11	5-15	1.15-1.35	0.6-2.0	0.16-0.19	5.6-6.0	Low----------	0.37	5	2-5
Si	11-22	5-15	1.30-1.50	0.6-2.0	0.16-0.19	5.6-6.0	Low----------	0.43		
	22-60	5-10	1.30-1.50	0.6-2.0	0.16-0.19	5.6-6.5	Low----------	0.43		
237, 238---------	0-10	5-10	0.70-0.95	2.0-6.0	0.10-0.20	4.5-6.0	Low----------	0.10	1	5-10
Skykomish	10-15	5-10	0.65-1.00	2.0-6.0	0.10-0.20	4.5-6.0	Low----------	0.10		
	15-60	0-5	1.40-1.65	>20	0.03-0.05	5.6-6.0	Low----------	0.02		
239----------	0-10	5-10	0.70-0.95	2.0-6.0	0.10-0.20	4.5-6.0	Low----------	0.10	1	5-10
Skykomish	10-15	5-10	0.65-1.00	2.0-6.0	0.10-0.20	4.5-6.0	Low----------	0.10		
	15-60	0-5	1.40-1.65	>20	0.03-0.05	5.6-6.0	Low----------	0.02		
240----------	0-5	7-10	0.65-0.85	2.0-6.0	0.15-0.25	4.5-6.0	Low----------	0.17	1	5-10
Skykomish	5-22	5-10	0.65-1.00	2.0-6.0	0.10-0.20	4.5-6.0	Low----------	0.10		
	22-60	0-5	1.40-1.65	>20	0.03-0.05	5.6-6.0	Low----------	0.02		
241----------	0-8	0-5	1.35-1.50	6.0-20	0.06-0.09	5.6-7.3	Low----------	0.17	1	.5-2
Snoqualmie	8-36	0-5	1.40-1.55	>20	0.02-0.04	5.6-7.3	Low----------	0.02		
	36-60	0-5	1.40-1.55	>20	0.02-0.04	5.6-7.3	Low----------	0.02		
242----------	0-8	0-5	1.35-1.50	6.0-20	0.06-0.09	5.6-7.3	Low----------	0.17	1	.5-2
Snoqualmie	8-36	0-5	1.40-1.55	>20	0.02-0.04	5.6-7.3	Low----------	0.02		
	36-60	0-5	1.40-1.55	>20	0.02-0.04	5.6-7.3	Low----------	0.02		
243----------	0-7	1-5	0.85-0.95	6.0-20	0.07-0.09	5.1-5.5	Low----------	0.24	5	2-8
Spukwush	7-15	5-10	0.85-0.95	6.0-20	0.08-0.10	5.1-5.5	Low----------	0.15		
	15-36	18-27	1.10-1.20	0.6-2.0	0.14-0.16	5.6-6.0	Moderate-----	0.37		
	36-60	18-27	1.10-1.20	0.2-0.6	0.16-0.18	5.6-6.5	Moderate-----	0.24		
244----------	0-8	---	0.65-0.85	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10	2	10-15
Stahl	8-15	---	0.85-0.95	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.05		
	15-29	---	0.85-1.10	0.6-2.0	0.05-0.10	5.1-6.0	Low----------	0.05		
	29	---	---	---	---	---	----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
245----------	0-7	---	0.65-0.85	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10	2	10-15
Stahl	7-17	---	0.85-0.95	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.05		
	17-35	---	0.85-1.10	0.6-2.0	0.05-0.10	5.1-6.0	Low----------	0.05		
	35-60	---	---	---	---	---	----------	----		
246----------	0-7	---	0.65-0.85	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.10	2	10-15
Stahl	7-17	---	0.85-0.95	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.05		
	17-35	---	0.85-1.10	0.6-2.0	0.05-0.10	5.1-6.0	Low----------	0.05		
	35	---	---	---	---	---	----------	----		
247----------	0-28	7-15	0.65-1.00	0.6-2.0	0.20-0.30	5.6-6.5	Low----------	0.32	5	2-8
Sulsavar	28-51	5-15	0.85-1.10	2.0-6.0	0.15-0.20	6.1-7.3	Low----------	0.15		
	51-60	3-15	0.95-1.20	2.0-6.0	0.08-0.12	6.1-7.3	Low----------	0.15		
248----------	0-9	15-20	1.15-1.35	0.6-2.0	0.18-0.20	6.1-7.3	Low----------	0.37	5	5-10
Sultan	9-48	20-35	1.30-1.50	0.2-0.6	0.18-0.20	6.1-7.3	Moderate-----	0.32		
	48-60	5-15	1.30-1.60	0.6-2.0	0.13-0.17	4.5-7.3	Low----------	0.37		
249, 250, 251----	0-7	0-5	0.85-1.10	6.0-20	0.10-0.15	5.1-6.0	Low----------	0.17	5	2-6
Teneriffe	7-11	0-10	0.95-1.30	6.0-20	0.07-0.11	5.1-6.0	Low----------	0.15		
	11-21	0-5	1.10-1.45	6.0-20	0.05-0.08	5.1-6.0	Low----------	0.10		
	21-37	0-5	1.30-1.55	6.0-20	0.05-0.07	5.6-6.5	Low----------	0.05		
	37-60	0-5	1.35-1.60	6.0-20	0.02-0.04	5.6-6.5	Low----------	0.02		
252, 253----------	0-6	5-10	0.85-1.10	6.0-20	0.07-0.11	5.1-6.0	Low----------	0.15	1	2-6
Teneriffe	6-11	0-10	0.95-1.30	6.0-20	0.05-0.08	5.1-6.0	Low----------	0.10		
	11-47	0-5	1.30-1.60	6.0-20	0.05-0.07	5.6-6.5	Low----------	0.05		
	47	---	---	---	---	---	----------	----		
254, 255, 256, 257----------	0-3	5-15	0.65-0.85	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20	2	10-15
Tokul	3-31	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20		
	31-37	5-15	0.85-1.20	0.6-2.0	0.10-0.20	5.1-6.5	Low----------	0.20		
	37	---	---	---	---	---	----------	----		
258*:										
Tokul----------	0-3	5-15	0.65-0.85	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20	2	10-15
	3-31	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20		
	31-37	5-15	0.85-1.20	0.6-2.0	0.10-0.20	5.1-6.5	Low----------	0.20		
	37	---	---	---	---	---	----------	----		
Pastik----------	0-6	---	0.60-0.85	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32	5	10-15
	6-31	---	0.85-1.10	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32		
	31-60	18-30	1.30-1.55	0.06-0.2	0.15-0.20	5.1-6.5	Moderate-----	0.43		
259*:										
Tokul----------	0-3	5-15	0.65-0.85	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20	2	10-15
	3-31	5-15	0.85-1.10	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20		
	31-37	5-15	0.85-1.20	0.6-2.0	0.10-0.20	5.1-6.5	Low----------	0.20		
	37	---	---	---	---	---	----------	----		
Pastik----------	0-6	---	0.60-0.85	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32	5	10-15
	6-31	---	0.85-1.10	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.32		
	31-60	18-30	1.30-1.55	0.06-0.2	0.15-0.20	5.1-6.5	Moderate-----	0.43		
260----------	0-5	---	0.65-0.85	0.6-2.0	0.16-0.18	5.1-6.5	Low----------	0.28	1	10-15
Treen	5-14	---	0.65-0.85	0.6-2.0	0.09-0.12	5.1-6.5	Low----------	0.24		
	14-18	---	1.10-1.25	2.0-6.0	0.08-0.10	5.1-6.5	Low----------	0.24		
	18	---	---	---	---	---	----------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
261----------	0-41	---	---	0.6-2.0	0.35-0.40	4.5-5.5	----------	0.00	1	40-90
Tukwila	41-60	---	---	0.6-2.0	0.35-0.40	4.5-5.5	----------	0.00		
262, 263---------	0-6	---	0.60-0.85	2.0-6.0	0.15-0.20	5.1-6.0	Low----------	0.28	3	10-15
Tusip	6-15	---	0.70-0.95	2.0-6.0	0.10-0.20	5.1-6.0	Low----------	0.20		
	15-38	10-18	0.70-0.95	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.17		
	38-43	10-18	0.85-1.25	0.6-2.0	0.07-0.10	5.1-6.0	Low----------	0.15		
	43	---	---	---	---	---	----------	----		
264----------	0-3	5-10	0.85-1.10	0.6-2.0	0.20-0.30	5.1-5.5	Low----------	0.15	2	2-10
Typic	3-45	5-10	0.85-1.10	0.6-2.0	0.08-0.12	5.1-6.0	Low----------	0.15		
Haplorthods	45	---	---	---	---	---	----------	----		
265, 266---------	0-5	15-25	1.00-1.30	0.6-2.0	0.14-0.20	5.1-6.0	Low----------	0.37	5	.5-3
Typic	5-16	10-25	1.10-1.35	0.6-2.0	0.12-0.16	5.1-6.0	Low----------	0.32		
Udifluvents	16-60	5-15	1.20-1.55	0.6-2.0	0.04-0.12	5.6-6.5	Low----------	0.05		
267----------	0-6	2-10	1.00-1.30	2.0-6.0	0.08-0.10	5.1-6.0	Low----------	0.15	5	.5-3
Udifluvents	6-21	1-5	1.20-1.45	2.0-20	0.03-0.06	5.1-6.0	Low----------	0.10		
	21-60	1-20	1.35-1.65	2.0-20	0.03-0.05	5.6-6.5	Low----------	0.05		
268, 269---------	0-10	---	0.65-0.85	0.6-2.0	0.25-0.35	5.1-6.0	Low----------	0.24	3	5-10
Vailton	10-37	---	0.85-1.10	0.6-2.0	0.25-0.35	5.1-6.0	Low----------	0.24		
	37-43	---	0.90-1.20	0.6-2.0	0.20-0.30	5.1-6.0	Low----------	0.15		
	43	---	---	---	---	---	----------	----		
270, 271, 272----	0-11	15-25	1.05-1.20	0.6-2.0	0.22-0.25	5.1-6.0	Low----------	0.32	5	5-10
Voight	11-43	27-35	1.40-1.60	0.6-2.0	0.12-0.15	5.1-6.0	Moderate-----	0.20		
	43-58	20-35	1.40-1.60	0.6-2.0	0.15-0.18	5.1-6.0	Moderate-----	0.24		
	58-60	15-25	1.45-1.65	0.6-2.0	0.15-0.18	5.1-6.0	Low----------	0.24		
273, 274---------	0-5	7-15	0.70-1.00	0.6-2.0	0.15-0.25	5.1-6.0	Low----------	0.28	3	2-8
Welcome	5-35	5-15	0.80-1.10	0.6-2.0	0.10-0.20	5.1-6.0	Low----------	0.37		
	35-53	5-10	0.90-1.20	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.37		
	53	---	---	---	---	---	----------	----		
275, 276, 277----	0-8	10-25	1.15-1.35	0.6-2.0	0.12-0.16	5.1-6.0	Low----------	0.20	5	5-10
Wilkeson	8-16	18-27	1.30-1.45	0.6-2.0	0.11-0.14	5.1-6.0	Moderate-----	0.20		
	16-34	25-35	1.25-1.45	0.6-2.0	0.12-0.17	5.1-6.0	Moderate-----	0.20		
	34-60	18-35	1.25-1.45	0.6-2.0	0.15-0.20	5.1-6.5	Moderate-----	0.20		
278, 279, 280----	0-11	5-15	0.95-1.15	0.6-2.0	0.25-0.35	5.1-6.5	Low----------	0.24	2	3-8
Winston	11-21	5-15	0.95-1.15	0.6-2.0	0.20-0.35	5.1-6.5	Low----------	0.24		
	21-34	5-15	1.00-1.20	0.6-2.0	0.15-0.25	5.1-6.5	Low----------	0.20		
	34-60	0-3	1.50-1.70	>20	0.03-0.05	5.6-7.3	Low----------	0.02		
281----------	0-7	18-27	1.15-1.35	0.6-2.0	0.20-0.24	5.1-6.0	Low----------	0.37	5	5-10
Woodinville	7-15	18-35	1.15-1.35	0.2-0.6	0.20-0.24	4.5-6.0	Low----------	0.37		
	15-60	18-27	1.10-1.40	0.2-0.6	0.20-0.28	4.5-6.0	Low----------	0.00		
282----------	0-18	---	0.65-0.85	0.6-2.0	0.30-0.40	5.6-7.3	Low----------	0.24	5	5-10
Zynbar	18-41	---	0.70-0.85	0.6-2.0	0.20-0.30	5.6-7.3	Low----------	0.20		
	41-60	---	0.70-0.95	0.6-2.0	0.25-0.35	5.6-7.3	Low----------	0.24		
283----------	0-18	---	0.65-0.85	0.6-2.0	0.30-0.40	5.6-7.3	Low----------	0.24	5	5-10
Zynbar	18-41	---	0.70-0.85	0.6-2.0	0.20-0.30	5.6-7.3	Low----------	0.20		
	41-60	---	0.70-0.95	0.6-2.0	0.25-0.35	5.6-7.3	Low----------	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
284----------	0-9	---	0.65-0.85	0.6-2.0	0.30-0.40	5.6-7.3	Low----------	0.32	4	5-10
Zynbar	9-29	---	0.60-0.85	0.6-2.0	0.20-0.35	5.6-7.3	Low----------	0.28		
	29-60	---	1.40-1.70	0.2-0.6	0.08-0.13	5.1-6.0	Low----------	0.10		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
1, 2---------- Alderwood	C	None----------	---	---	1.5-3.0	Perched	Dec-May
3---------- Alkiridge	C	None----------	---	---	1.5-3.0	Perched	Nov-May
4, 5, 6---------- Altapeak	B	None----------	---	---	>6.0	---	---
7*:							
Altapeak----------	B	None----------	---	---	>6.0	---	---
Rock outcrop----------	D	None----------	---	---	>6.0	---	---
8---------- Andic Cryumbrepts	C	None----------	---	---	>6.0	---	---
9---------- Arents	B	None----------	---	---	>6.0	---	---
10, 11, 12, 13, 14, 15, 16---------- Barneston	B	None----------	---	---	>6.0	---	---
17, 18, 19---------- Beausite	C	None----------	---	---	>6.0	---	---
20---------- Belfast	B	Occasional------	Brief---------	Nov-Mar	3.5-6.0	Apparent	Nov-Mar
21, 22---------- Bellicum	B	None----------	---	---	>6.0	---	---
23, 24---------- Blethen	B	None----------	---	---	>6.0	---	---
25---------- Borohemists	D	None----------	---	---	+1-0	Apparent	Oct-Jun
26---------- Bromo	B	None----------	---	---	>6.0	---	---
27, 28, 29, 30---------- Cattcreek	B	None----------	---	---	>6.0	---	---
31---------- Cattcreek	B	None----------	---	---	3.5-5.0	Perched	Nov-May
32, 33---------- Cayuse	B	None----------	---	---	>6.0	---	---
34, 35, 36, 37, 38------ Chinkmin	C	None----------	---	---	1.5-3.0	Perched	Nov-Jul
39, 40---------- Christoff	C	None----------	---	---	2.5-4.0	Perched	Dec-Apr

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
41, 42, 43--Chuckanut	B	None	---	---	>6.0	---	---
44, 45, 46--Cinebar	B	None	---	---	>6.0	---	---
47, 48--Cotteral	B	None	---	---	>6.0	---	---
49--Crinker	C	None	---	---	>6.0	---	---
50--Cryofluvents	B	Occasional	Brief	Dec-May	>6.0	---	---
51--Cryohemists	D	None	---	---	+1-0	Apparent	Nov-Jun
52--Dobbs	C	None	---	---	2.5-3.0	Perched	Nov-Mar
53--Edgewick	C	Occasional	Brief	Nov-Mar	3.0-4.0	Perched	Feb-Apr
54, 55--Elwell	C	None	---	---	1.5-3.0	Perched	Nov-Jun
56, 57, 58, 59--Ethania	B	None	---	---	>6.0	---	---
60--Ethania	B	None	---	---	3.5-5.0	Perched	Nov-May
61, 62--Foss	B	None	---	---	>6.0	---	---
63, 64, 65--Gallup	B	None	---	---	>6.0	---	---
66, 67, 68--Getchell	C	None	---	---	1.5-3.0	Perched	Nov-Apr
69--Greenwater	A	Rare	---	---	>6.0	---	---
70--Grotto	A	Rare	---	---	>6.0	---	---
71--Hartnit	C	None	---	---	>6.0	---	---
72, 73, 74, 75--Haywire	C	None	---	---	>6.0	---	---
76, 77, 78--Hinker	C	None	---	---	>6.0	---	---
79--Humaquepts	D	Rare	---	---	0.5-1.0	Apparent	Dec-Apr

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
80, 81, 82---------- Index	A	None----------	---	---	>6.0	---	---
83*:							
Index----------	A	None----------	---	---	>6.0	---	---
Rock outcrop----------	D	None----------	---	---	>6.0	---	---
84, 85, 86, 87, 88------ Jonas	B	None----------	---	---	>6.0	---	---
89, 90, 91---------- Kaleetan	B	None----------	---	---	>6.0	---	---
92, 93---------- Kaleetan	C	None----------	---	---	3.0-5.0	Perched	Nov-Mar
94, 95---------- Kaleetan	B	None----------	---	---	>6.0	---	---
96, 97, 98, 99---------- Kanaskat	B	None----------	---	---	>6.0	---	---
100, 101, 102---------- Kapowsin	D	None----------	---	---	1.0-2.0	Perched	Dec-Jun
103, 104, 105---------- Kindy	C	None----------	---	---	1.5-3.0	Perched	Nov-Apr
106---------- Klaber	D	None----------	---	---	+1-0.5	Perched	Nov-May
107*:							
Klaber----------	D	None----------	---	---	+1-0.5	Perched	Nov-May
Cinebar----------	B	None----------	---	---	>6.0	---	---
108, 109---------- Klapatche	C	None----------	---	---	>6.0	---	---
110*:							
Klapatche----------	C	None----------	---	---	>6.0	---	---
Rock outcrop----------	D	None----------	---	---	>6.0	---	---
111, 112, 113, 114, 115- Klaus	C	None----------	---	---	>6.0	---	---
116, 117, 118---------- Larrupin	B	None----------	---	---	>6.0	---	---
119---------- Lemolo	D	Rare----------	---	---	0-1.0	Perched	Nov-May
120, 121, 122, 123, 124, 125---------- Littlejohn	C	None----------	---	---	>6.0	---	---
126*:							
Littlejohn----------	C	None----------	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
126*:							
Rock outcrop	D	None	---	---	>6.0	---	---
127 Lynnwood	A	None	---	---	>6.0	---	---
128, 129 Marblemount	B	None	---	---	>6.0	---	---
130 Marblemount	C	None	---	---	>6.0	---	---
131*:							
Marblemount	B	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
132, 133 Mashel	B	None	---	---	>6.0	---	---
134, 135, 136, 137 Melakwa	C	None	---	---	>6.0	---	---
138*:							
Melakwa	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
139 Mowich	D	None	---	---	1.0-2.0	Perched	Nov-May
140 Mukilteo	D	None	---	---	+1-0	Apparent	Nov-May
141, 142, 143, 144 Nagrom	C	None	---	---	>6.0	---	---
145*:							
Nagrom	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
146, 147 Nargar	B	None	---	---	>6.0	---	---
148*:							
Nargar	B	None	---	---	>6.0	---	---
Pastik	D	None	---	---	1.5-2.5	Perched	Dec-May
149 National	B	None	---	---	5.0-6.0	Apparent	Dec-Apr
150 Neilton	A	None	---	---	>6.0	---	---
151, 152, 153, 154, 155- Nimue	B	None	---	---	>6.0	---	---
156*:							
Nimue	B	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
156*:							
Rock outcrop	D	None	---	---	>6.0	---	---
157 Nooksack	C	Occasional	Brief	Nov-Mar	3.0-4.0	Perched	Feb-May
158 Norma	D	None	---	---	+1-1.0	Apparent	Nov-May
159, 160, 161 Oakes	B	None	---	---	>6.0	---	---
162, 163 Ogarty	C	None	---	---	>6.0	---	---
164*:							
Ogarty	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
165, 166 Ohop	C	None	---	---	2.0-3.0	Perched	Dec-Apr
167, 168 Olomount	C	None	---	---	>6.0	---	---
169*:							
Olomount	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
170 Oridia	D	Occasional	Brief	Nov-Apr	1.0-3.0	Apparent	Nov-Apr
171*:							
Orthents	C	None	---	---	>6.0	---	---
Humods	C	None	---	---	>6.0	---	---
172, 173 Ovall	C	None	---	---	>6.0	---	---
174 Pastik	D	None	---	---	1.5-2.5	Perched	Dec-May
175, 176 Persis	B	None	---	---	>6.0	---	---
177, 178, 179, 180 Pheeney	C	None	---	---	>6.0	---	---
181*:							
Pheeney	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
182, 183 Philippa	C	None	---	---	2.0-3.0	Perched	Dec-Apr

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
184--- Pierking	D	Rare	---	---	0.5-1.0	Apparent	Nov-Mar
185*:							
Pierking	D	Rare	---	---	0.5-1.0	Apparent	Nov-Mar
Borohemists	D	Rare	---	---	+1-0	Apparent	Oct-Jun
186*:							
Pierking	D	None	---	---	0.5-1.0	Apparent	Nov-Mar
Mowich	D	None	---	---	1.0-2.0	Perched	Nov-May
187--- Pilchuck	C	Occasional	Brief	Nov-Apr	2.0-4.0	Apparent	Nov-Apr
188, 189, 190, 191, 192, 193--- Pitcher	B	None	---	---	>6.0	---	---
194*:							
Pitcher	B	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
195*--- Pits	A	None	---	---	>6.0	---	---
196, 197, 198, 199, 200--- Playco	B	None	---	---	>6.0	---	---
201*:							
Playco	B	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
202--- Puget	D	Occasional	Brief	Nov-Apr	1.0-3.0	Apparent	Nov-May
203, 204--- Ragnar	B	None	---	---	>6.0	---	---
205*, 206*:							
Ragnar	B	None	---	---	>6.0	---	---
Lynnwood	A	None	---	---	>6.0	---	---
207--- Reggad	A	None	---	---	>6.0	---	---
208*:							
Reggad	A	None	---	---	>6.0	---	---
Haywire	C	None	---	---	>6.0	---	---
209*:							
Reggad	A	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
209*:							
Klapatche	C	None	---	---	>6.0	---	---
Rock outcrop	D	None	---	---	>6.0	---	---
210*:							
Reggad	A	None	---	---	>6.0	---	---
Serene	C	None	---	---	>6.0	---	---
211, 212, 213, 214--- Reichel	B	None	---	---	>6.0	---	---
215*--- Riverwash	D	Frequent	Long to very long.	Oct-Jul	0-2.0	Apparent	Jan-Dec
216, 217--- Rober	C	None	---	---	2.0-3.5	Perched	Dec-May
218*--- Rock outcrop	D	None	---	---	>6.0	---	---
219*:							
Rock outcrop	D	None	---	---	>6.0	---	---
Cattcreek	B	None	---	---	>6.0	---	---
220*:							
Rock outcrop	D	None	---	---	>6.0	---	---
Cayuse	B	None	---	---	>6.0	---	---
221*:							
Rock outcrop	D	None	---	---	>6.0	---	---
Haywire	C	None	---	---	>6.0	---	---
222*:							
Rock outcrop	D	None	---	---	>6.0	---	---
Rubble land	A	None	---	---	>6.0	---	---
Haywire	C	None	---	---	>6.0	---	---
223*:							
Rock outcrop	D	None	---	---	>6.0	---	---
Rubble land	A	None	---	---	>6.0	---	---
Serene	C	None	---	---	>6.0	---	---
224*--- Rubble land	A	None	---	---	>6.0	---	---
225--- Rugles	B	None	---	---	>6.0	---	---
226--- Salal	C	Occasional	Brief	Nov-Mar	3.0-4.0	Apparent	Feb-Apr

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
227---------- Sauk	B	None----------	---	---	>6.0	---	---
228, 229, 230---------- Scamman	D	None----------	---	---	0.5-1.5	Perched	Nov-Apr
231---------- Seattle	D	None----------	---	---	+1-0.5	Apparent	Oct-May
232, 233---------- Serene	C	None----------	---	---	>6.0	---	---
234*:							
Serene----------	C	None----------	---	---	>6.0	---	---
Rock outcrop----------	D	None----------	---	---	>6.0	---	---
235---------- Shalcar	D	None----------	---	---	+1-1.5	Apparent	Oct-May
236---------- Si	C	Occasional------	Brief---------	Feb-Apr	2.0-4.0	Apparent	Nov-Apr
237, 238---------- Skykomish	B	None----------	---	---	>6.0	---	---
239---------- Skykomish	B	None----------	---	---	>6.0	---	---
240---------- Skykomish	B	None----------	---	---	>6.0	---	---
241, 242---------- Snoqualmie	C	Occasional------	Brief---------	Nov-Apr	3.0-5.0	Apparent	Nov-Apr
243---------- Spukwush	B	None----------	---	---	>6.0	---	---
244, 245, 246---------- Stahl	C	None----------	---	---	>6.0	---	---
247---------- Sulsavar	B	Rare----------	---	---	>6.0	---	---
248---------- Sultan	C	Rare----------	---	---	2.0-4.0	Apparent	Nov-Apr
249, 250, 251, 252, 253- Teneriffe	A	None----------	---	---	>6.0	---	---
254, 255, 256, 257------ Tokul	C	None----------	---	---	1.5-3.0	Perched	Nov-May
258*, 259*:							
Tokul----------	C	None----------	---	---	1.5-3.0	Perched	Nov-May
Pastik----------	D	None----------	---	---	1.5-2.5	Perched	Dec-May
260---------- Treen	D	None----------	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
261---------- Tukwila	D	None----------	---	---	+1-1.0	Apparent	Oct-May
262, 263---------- Tusip	B	None----------	---	---	>6.0	---	---
264---------- Typic Haplorthods	B	None----------	---	---	>6.0	---	---
265, 266---------- Typic Udifluvents	B	Frequent--------	Brief---------	Dec-Apr	>6.0	---	---
267---------- Udifluvents	B	Occasional------	Brief---------	Dec-Apr	>6.0	---	---
268, 269---------- Vailton	B	None----------	---	---	>6.0	---	---
270, 271, 272---------- Voight	B	None----------	---	---	>6.0	---	---
273, 274---------- Welcome	B	None----------	---	---	>6.0	---	---
275, 276, 277---------- Wilkeson	B	None----------	---	---	>6.0	---	---
278, 279, 280---------- Winston	B	None----------	---	---	>6.0	---	---
281---------- Woodinville	C	Rare----------	---	---	1.5-3.0	Apparent	Oct-Apr
282---------- Zynbar	B	None----------	---	---	>6.0	---	---
283---------- Zynbar	B	None----------	---	---	>6.0	---	---
284---------- Zynbar	C	None----------	---	---	3.0-4.0	Perched	Dec-Mar

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL FEATURES

(The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
1, 2--- Alderwood	>60	---	20-40	Thin	---	---	---	Moderate	Moderate.
3--- Alkiridge	>60	---	20-40	Thin	---	---	Moderate	Moderate	Moderate.
4, 5, 6--- Altapeak	40-60	Soft	---	---	---	---	Low---	High---	High.
7*:									
Altapeak---	40-60	Soft	---	---	---	---	Low---	High---	High.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
8--- Andic Cryumbrepts	20-60	Hard	---	---	---	---	Moderate	Moderate	Moderate.
9--- Arents	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
10, 11, 12, 13, 14, 15, 16--- Barneston	>60	---	---	---	---	---	---	Moderate	Moderate.
17, 18, 19--- Beausite	24-40	Hard	---	---	---	---	---	Moderate	Moderate.
20--- Belfast	>60	---	---	---	---	---	Low---	Moderate	Moderate.
21, 22--- Bellicum	40-60	Hard	---	---	---	---	High---	Moderate	Moderate.
23, 24--- Blethen	>60	---	---	---	---	---	---	Moderate	Moderate.
25--- Borohemists	>60	---	---	---	4-10	16-30	High---	High---	High.
26--- Bromo	>60	---	---	---	---	---	High---	Moderate	Moderate.
27, 28, 29, 30--- Cattcreek	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
31--- Cattcreek	>60	---	40-60	Thin	---	---	Moderate	Moderate	Moderate.
32, 33--- Cayuse	>60	---	---	---	---	---	High---	Moderate	Moderate.
34, 35, 36, 37, 38--- Chinkmin	>60	---	20-40	Thin	---	---	Moderate	High---	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
39, 40---------- Christoff	>60	---	---	---	---	---	High-----	Moderate	Moderate.
41, 42, 43---------- Chuckanut	40-60	Soft	---	---	---	---	---	Moderate	Moderate.
44, 45, 46---------- Cinebar	>60	---	---	---	---	---	---	High-----	High.
47, 48---------- Cotteral	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
49---------- Crinker	20-40	Hard	---	---	---	---	Moderate	High-----	High.
50---------- Cryofluvents	40-80	Hard	---	---	---	---	Low------	High-----	High.
51---------- Cryohemists	>60	---	---	---	---	---	High-----	High-----	High.
52---------- Dobbs	>60	---	30-40	Thin	---	---	Moderate	Moderate	Moderate.
53---------- Edgewick	>60	---	---	---	---	---	---	High-----	High.
54, 55---------- Elwell	>60	---	20-40	Thin	---	---	High-----	High-----	High.
56, 57, 58, 59---------- Ethania	>60	---	---	---	---	---	Moderate	High-----	High.
60---------- Ethania	>60	---	40-60	Thin	---	---	Moderate	High-----	High.
61, 62---------- Foss	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
63, 64, 65---------- Gallup	>60	---	---	---	---	---	High-----	High-----	High.
66, 67, 68---------- Getchell	>60	---	20-40	Thin	---	---	High-----	High-----	High.
69---------- Greenwater	>60	---	---	---	---	---	---	Moderate	Moderate.
70---------- Grotto	>60	---	---	---	---	---	Low------	High-----	High.
71---------- Hartnit	20-40	Hard	---	---	---	---	High-----	High-----	High.
72, 73, 74, 75---------- Haywire	20-40	Hard	---	---	---	---	Moderate	High-----	High.
76, 77, 78---------- Hinker	20-40	Hard	---	---	---	---	Moderate	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
79---------- Humaquepts	>60	---	---	---	---	---	High-----	High-----	High.
80, 81, 82---------- Index	40-70	Soft	---	---	---	---	Low------	High-----	High.
83*:									
Index---------- Rock outcrop----------	40-70 0	Soft Hard	--- ---	--- ---	--- ---	--- ---	Low------ ---	High----- ---	High. ---
84, 85---------- Jonas	40-60	Soft	---	---	---	---	High-----	Moderate	Moderate.
86, 87, 88---------- Jonas	>60	---	---	---	---	---	High-----	Moderate	Moderate.
89, 90, 91---------- Kaleetan	>60	---	---	---	---	---	Moderate	High-----	High.
92, 93---------- Kaleetan	>60	---	40-60	Thin	---	---	Moderate	High-----	High.
94, 95---------- Kaleetan	>60	---	---	---	---	---	Moderate	High-----	High.
96, 97, 98, 99---------- Kanaskat	60-72	Soft	---	---	---	---	---	Moderate	Moderate.
100, 101, 102---------- Kapowsin	>60	---	20-40	Thin	---	---	---	Moderate	Moderate.
103, 104, 105---------- Kindy	>60	---	20-40	Thin	---	---	Moderate	High-----	High.
106---------- Klaber	>60	---	---	---	---	---	---	High-----	High.
107*:									
Klaber---------- Cinebar----------	>60 >60	--- ---	--- ---	--- ---	--- ---	--- ---	--- ---	High----- High-----	High. High.
108, 109---------- Klapatche	30-40	Hard	---	---	---	---	Low------	High-----	High.
110*:									
Klapatche---------- Rock outcrop----------	30-40 0	Hard Hard	--- ---	--- ---	--- ---	--- ---	Low------ ---	High----- ---	High. ---
111, 112, 113, 114, 115- Klaus	>60	---	20-40	Thin	---	---	---	High-----	High.
116, 117---------- Larrupin	>60	---	---	---	---	---	High-----	Moderate	Low.
118---------- Larrupin	>60	---	40-60	Thin	---	---	Moderate	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
119--- Lemolo	>60	---	---	---	---	---	---	High-----	High.
120, 121, 122, 123, 124, 125--- Littlejohn	25-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
126*:									
Littlejohn---	25-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
127--- Lynnwood	>60	---	---	---	---	---	Low------	Moderate	Moderate.
128, 129, 130--- Marblemount	20-40	Soft	---	---	---	---	Low------	Moderate	Moderate.
131*:									
Marblemount---	20-40	Soft	---	---	---	---	Low------	Moderate	Moderate.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
132, 133--- Mashel	>60	---	---	---	---	---	---	High-----	High.
134, 135, 136, 137--- Melakwa	20-40	Hard	---	---	---	---	Moderate	High-----	High.
138*:									
Melakwa---	20-40	Hard	---	---	---	---	Moderate	High-----	High.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
139--- Mowich	>60	---	---	---	---	---	Moderate	High-----	High.
140--- Mukilteo	>60	---	---	---	4-12	>60	---	High-----	High.
141, 142--- Nagrom	20-40	Hard	---	---	---	---	Moderate	High-----	High.
143, 144--- Nagrom	20-40	Soft	---	---	---	---	Moderate	High-----	High.
145*:									
Nagrom---	20-40	Hard	---	---	---	---	Moderate	High-----	High.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
146, 147--- Nargar	>60	---	---	---	---	---	---	Moderate	Moderate.
148*:									
Nargar---	>60	---	---	---	---	---	---	Moderate	Moderate.
Pastik---	>60	---	---	---	---	---	Low------	Moderate	Moderate.
149--- National	>60	---	---	---	---	---	---	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
150--- Neilton	>60	---	---	---	---	---	Low---	Moderate	Moderate.
151, 152, 153, 154, 155- Nimue	>60	---	---	---	---	---	Moderate	High---	High.
156*:									
Nimue---	>60	---	---	---	---	---	Moderate	High---	High.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
157--- Nooksack	>60	---	---	---	---	---	---	Moderate	Low.
158--- Norma	>60	---	---	---	---	---	---	Moderate	Moderate.
159--- Oakes	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
160, 161--- Oakes	>60	---	40-60	Thin	---	---	Moderate	Moderate	Moderate.
162, 163--- Ogarty	20-40	Hard	---	---	---	---	---	High---	High.
164*:									
Ogarty---	20-40	Hard	---	---	---	---	---	High---	High.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
165, 166--- Ohop	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
167, 168--- Olomount	20-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
169*:									
Olomount---	20-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
Rock outcrop---	0	Hard	---	---	---	---	---	---	---
170--- Oridia	>60	---	---	---	---	---	---	High---	High.
171*:									
Orthents---	20-80	Hard	---	---	---	---	Low---	Moderate	Moderate.
Humods---	20-60	Hard	---	---	---	---	Low---	Moderate	Moderate.
172, 173--- Ovall	20-40	Hard	---	---	---	---	---	Moderate	Moderate.
174--- Pastik	>60	---	---	---	---	---	Low---	Moderate	Moderate.
175, 176--- Persis	>60	---	---	---	---	---	---	High---	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
177, 178---------- Pheeney	20-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
179, 180---------- Pheeney	20-40	Soft	---	---	---	---	Moderate	Moderate	Moderate.
181*:									
Pheeney----------	20-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
Rock outcrop----------	0	Hard	---	---	---	---	---	---	---
182, 183---------- Philippa	>60	---	20-40	Thin	---	---	Moderate	High-----	High.
184---------- Pierking	>60	---	---	---	---	---	High-----	Moderate	Moderate.
185*:									
Pierking----------	>60	---	---	---	---	---	High-----	Moderate	Moderate.
Borohemists----------	>60	---	---	---	4-10	16-30	High-----	High-----	High.
186*:									
Pierking----------	>60	---	---	---	---	---	High-----	Moderate	Moderate.
Mowich----------	>60	---	---	---	---	---	Moderate	High-----	High.
187---------- Pilchuck	>60	---	---	---	---	---	---	Moderate	Moderate.
188, 189, 190, 191, 192, 193---------- Pitcher	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
194*:									
Pitcher----------	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
Rock outcrop----------	0	Hard	---	---	---	---	---	---	---
195*---------- Pits	>60	---	---	---	---	---	---	---	---
196, 197, 198, 199, 200- Playco	>60	---	---	---	---	---	Moderate	High-----	High.
201*:									
Playco----------	>60	---	---	---	---	---	Moderate	High-----	High.
Rock outcrop----------	0	Hard	---	---	---	---	---	---	---
202---------- Puget	>60	---	---	---	---	---	---	High-----	High.
203, 204---------- Ragnar	>60	---	---	---	---	---	---	Moderate	Moderate.
205*, 206*:									
Ragnar----------	>60	---	---	---	---	---	---	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
205*, 206*:									
Lynnwood	>60	---	---	---	---	---	Low	Moderate	Moderate.
207	>60	---	---	---	---	---	Low	Moderate	Moderate.
Reggad									
208*:									
Reggad	>60	---	---	---	---	---	Low	Moderate	Moderate.
Haywire	20-40	Hard	---	---	---	---	Moderate	High	High.
209*:									
Reggad	>60	---	---	---	---	---	Low	Moderate	Moderate.
Klapatche	30-40	Hard	---	---	---	---	Low	High	High.
Rock outcrop	0	Hard	---	---	---	---	---	---	---
210*:									
Reggad	>60	---	---	---	---	---	Low	Moderate	Moderate.
Serene	20-40	Soft	---	---	---	---	Low	High	High.
211, 212	40-60	Hard	---	---	---	---	High	High	High.
Reichel									
213, 214	40-80	Soft	---	---	---	---	High	High	High.
Reichel									
215*	>60	---	---	---	---	---	---	---	---
Riverwash									
216, 217	>60	---	---	---	---	---	High	Moderate	Moderate.
Rober									
218*	0	Hard	---	---	---	---	---	---	---
Rock outcrop									
219*:									
Rock outcrop	0	Hard	---	---	---	---	---	---	---
Cattcreek	40-60	Hard	---	---	---	---	Moderate	Moderate	Moderate.
220*:									
Rock outcrop	0	Hard	---	---	---	---	---	---	---
Cayuse	>60	---	---	---	---	---	High	Moderate	Moderate.
221*:									
Rock outcrop	0	Hard	---	---	---	---	---	---	---
Haywire	20-40	Hard	---	---	---	---	Moderate	High	High.
222*:									
Rock outcrop	0	Hard	---	---	---	---	---	---	---
Rubble land	>40	Hard	---	---	---	---	---	---	---
Haywire	20-40	Hard	---	---	---	---	Moderate	High	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
223*:									
Rock outcrop	0	Hard	---	---	---	---	---	---	---
Rubble land	>40	Hard	---	---	---	---	---	---	---
Serene	20-40	Soft	---	---	---	---	Low	High	High.
224* Rubble land	>40	Hard	---	---	---	---	---	---	---
225 Rugles	>60	---	---	---	---	---	High	Moderate	Moderate.
226 Salal	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
227 Sauk	>60	---	---	---	---	---	---	Moderate	Moderate.
228, 229, 230 Scamman	>60	---	---	---	---	---	---	Moderate	Moderate.
231 Seattle	>60	---	---	---	6-20	>50	---	High	High.
232, 233 Serene	20-40	Soft	---	---	---	---	Low	High	High.
234*:									
Serene	20-40	Soft	---	---	---	---	Low	High	High.
Rock outcrop	0	Hard	---	---	---	---	---	---	---
235 Shalcar	>60	---	---	---	6-10	16-51	---	High	High.
236 Si	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
237, 238 Skykomish	>60	---	---	---	---	---	Low	High	High.
239 Skykomish	>60	---	---	---	---	---	Low	High	High.
240 Skykomish	>60	---	---	---	---	---	Low	High	High.
241, 242 Snoqualmie	>60	---	---	---	---	---	---	Moderate	Moderate.
243 Spukwush	>60	---	---	---	---	---	High	Moderate	Moderate.
244, 245, 246 Stahl	20-40	Hard	---	---	---	---	Moderate	Moderate	Moderate.
247 Sulsavar	>60	---	---	---	---	---	---	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total	frost action	Uncoated steel	Concrete
	In		In		In	In			
248--- Sultan	>60	---	---	---	---	---	---	High-----	High.
249, 250--- Teneriffe	>60	---	---	---	---	---	---	Moderate	Moderate.
251, 252, 253--- Teneriffe	40-60	Soft	---	---	---	---	---	Moderate	Moderate.
254, 255, 256, 257--- Tokul	>60	---	20-40	Thin	---	---	---	Moderate	Moderate.
258*, 259*:									
Tokul---	>60	---	20-40	Thin	---	---	---	Moderate	Moderate.
Pastik---	>60	---	---	---	---	---	Low------	Moderate	Moderate.
260--- Treen	10-20	Hard	---	---	---	---	High-----	Moderate	High.
261--- Tukwila	>60	---	---	---	6-12	>60	---	High-----	High.
262, 263--- Tusip	40-60	Soft	---	---	---	---	High-----	Moderate	Moderate.
264--- Typic Haplorthods	>60	---	20-60	Thin	---	---	---	Moderate	Moderate.
265, 266--- Typic Udifluvents	>60	---	---	---	---	---	Low------	Moderate	Moderate.
267--- Udifluvents	>60	---	---	---	---	---	Low------	Moderate	Moderate.
268, 269--- Vailton	40-60	Soft	---	---	---	---	High-----	Moderate	Moderate.
270, 271, 272--- Voight	>60	---	---	---	---	---	Moderate	Moderate	Moderate.
273, 274--- Welcome	40-60	Soft	---	---	---	---	High-----	Moderate	Moderate.
275, 276, 277--- Wilkeson	>60	---	---	---	---	---	---	Moderate	Moderate.
278, 279, 280--- Winston	>60	---	---	---	---	---	---	Moderate	Moderate.
281--- Woodinville	>60	---	---	---	3-6	24-33	---	High-----	High.
282--- Zynbar	>60	---	---	---	---	---	High-----	Moderate	Moderate.
283--- Zynbar	>60	---	---	---	---	---	High-----	Moderate	Moderate.
284--- Zynbar	>60	---	---	---	---	---	High-----	Moderate	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alderwood	Loamy-skeletal, mixed, mesic, ortstein Aquic Haplorthods
Alkiridge	Ashy over loamy-skeletal, mixed Typic Cryorthods
Altapeak	Sandy-skeletal, mixed Typic Cryorthods
Andic Cryumbrepts	Andic Cryumbrepts
Arents	Arents
Barneston	Sandy-skeletal, mixed, mesic Typic Haplorthods
Beausite	Loamy-skeletal, mixed, mesic Typic Haplorthods
Belfast	Coarse-loamy, mixed, nonacid, mesic Aquic Xerofluvents
Bellicum	Cindery over medial-skeletal, frigid Typic Haplorthods
Blethen	Loamy-skeletal, mixed, mesic Typic Haplorthods
Borohemists	Borohemists
Bromo	Cindery over medial, frigid Typic Haplorthods
Cattcreek	Cindery over medial-skeletal Typic Cryorthods
Cayuse	Ashy over medial Typic Cryandepts
Chinkmin	Loamy-skeletal, mixed, ortstein Typic Cryohumods
Christoff	Fine-loamy, mixed Eutric Glossoboralfs
Chuckanut	Coarse-loamy, mixed, mesic Typic Haplorthods
Cinebar	Medial, mesic Typic Dystrandepts
Cotteral	Cindery over medial Typic Cryorthods
Crinker	Loamy-skeletal, mixed Typic Cryorthods
Cryofluvents	Cryofluvents
Cryohemists	Cryohemists
Dobbs	Medial-skeletal, frigid Andic Haplumbrepts
Edgewick	Coarse-loamy, mixed, mesic Fluventic Haplumbrepts
Elwell	Coarse-loamy, mixed, frigid, ortstein Typic Haplorthods
Ethania	Cindery over medial-skeletal Typic Cryohumods
Foss	Medial over loamy-skeletal, mixed Typic Cryorthods
Gallup	Coarse-loamy, mixed Humic Cryorthods
Getchell	Coarse-loamy, mixed, ortstein Typic Cryorthods
Greenwater	Mixed, mesic Dystric Xeropsamments
Grotto	Sandy-skeletal, mixed, frigid Typic Haplorthods
Hartnit	Coarse-loamy, mixed Typic Cryorthods
Haywire	Loamy-skeletal, mixed Typic Cryohumods
Hinker	Loamy-skeletal, mixed Humic Cryorthods
Humaquepts	Humaquepts
Humods	Humods
Index	Sandy-skeletal, mixed Haplic Cryohumods
Jonas	Medial, frigid Andic Haplumbrepts
Kaleetan	Loamy-skeletal, mixed, frigid Typic Haplohumods
Kanaskat	Loamy-skeletal, mixed, mesic Typic Haplorthods
Kapowsin	Coarse-loamy, mixed, mesic, ortstein Aquic Haplorthods
Kindy	Loamy-skeletal, mixed, ortstein Typic Cryorthods
Klaber	Fine, mixed, mesic Typic Glossaqualfs
Klapatche	Sandy-skeletal, mixed Haplic Cryohumods
Klaus	Sandy-skeletal, mixed, mesic, ortstein Typic Haplorthods
Larrupin	Loamy-skeletal, mixed, frigid Typic Haplorthods
Lemolo	Loamy-skeletal, mixed, nonacid, mesic Typic Humaquepts
Littlejohn	Loamy-skeletal, mixed, frigid Typic Haplorthods
Lynnwood	Sandy, mixed, mesic Entic Haplorthods
Marblemount	Sandy-skeletal, mixed, frigid Typic Haplorthods
Mashel	Fine, halloysitic, mesic Ultic Haploxeralfs
Melakwa	Loamy-skeletal, mixed, frigid Typic Haplohumods
Mowich	Coarse-silty over clayey, mixed, frigid Aquic Haplorthods
Mukilteo	Dysic, mesic Typic Medihemists
Nagrom	Loamy-skeletal, mixed Haplic Cryohumods
Nargar	Sandy, mixed, mesic Typic Haplorthods
National	Cindery over medial, mesic Umbric Vitrandepts
Neilton	Sandy-skeletal, mixed, mesic Dystric Xerorthents
Nimue	Loamy-skeletal, mixed Haplic Cryohumods
Nooksack	Coarse-silty, mixed, mesic Fluventic Haploxerolls
Norma	Coarse-loamy, mixed, nonacid, mesic Mollic Haplaquepts
Oakes	Loamy-skeletal, mixed, frigid Typic Haplorthods

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Ogarty	Loamy-skeletal, mixed, mesic Typic Haplorthods
Ohop	Loamy-skeletal, mixed, frigid Aquic Dystrochrepts
Olomount	Loamy-skeletal, mixed, frigid Typic Haplorthods
Oridia	Coarse-silty, mixed, nonacid, mesic Aeric Fluvaquents
Orthents	Orthents
Ovall	Loamy-skeletal, mixed, mesic Typic Xerumbrepts
Pastik	Coarse-silty, mixed, mesic Aquic Haplorthods
Persis	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Humic Haplorthods
Pheeney	Medial-skeletal, frigid Andic Xerumbrepts
Philippa	Loamy-skeletal, mixed, frigid, ortstein Humic Haplorthods
Pierking	Loamy-skeletal, mixed, nonacid, frigid Typic Haplaquepts
Pilchuck	Mixed, mesic Dystric Xeropsamments
Pitcher	Loamy-skeletal, mixed, frigid Typic Haplorthods
Playco	Loamy-skeletal, mixed Haplic Cryohumods
Puget	Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents
Ragnar	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Haplorthods
Reggad	Dysic Typic Cryofolists
Reichel	Medial Andic Cryumbrepts
Rober	Coarse-silty, mixed, frigid Aquic Haplorthods
Rugles	Medial, frigid Entic Dystrandepts
Salal	Coarse-silty, mixed, mesic Cumulic Haplumbrepts
Sauk	Coarse-loamy, mixed, mesic Typic Haplorthods
Scamman	Fine, mixed, mesic Aquic Palexeralfs
Seattle	Euic, mesic Hemic Medisaprists
Serene	Sandy-skeletal, mixed Humic Cryorthods
Shalcar	Loamy, mixed, euic, mesic Terric Medisaprists
Si	Coarse-silty, mixed, nonacid, mesic Typic Udifluvents
Skykomish	Sandy-skeletal, mixed, frigid Typic Haplorthods
Snoqualmie	Sandy-skeletal, mixed, mesic Dystric Xerorthents
Spukwush	Ashy over loamy, mixed Typic Cryorthods
Stahl	Medial-skeletal Andic Cryumbrepts
Sulsavar	Coarse-loamy, mixed, mesic Typic Haplorthods
Sultan	Fine-silty, mixed, nonacid, mesic Aquic Xerofluvents
Teneriffe	Sandy-skeletal, mixed, frigid Typic Haplorthods
Tokul	Coarse-loamy, mixed, mesic, ortstein Typic Haplorthods
Treen	Medial Lithic Cryandepts
Tukwila	Diatomaceous, dysic, mesic Limnic Medisaprists
Tusip	Ashy over loamy, mixed Typic Cryorthods
Typic Haplorthods	Typic Haplorthods
Typic Udifluvents	Typic Udifluvents
Udifluvents	Udifluvents
Vailton	Medial, frigid Andic Haplumbrepts
Voight	Fine-loamy, mixed Eutric Glossoboralfs
Welcome	Coarse-loamy, mixed, frigid Typic Haplorthods
Wilkeson	Fine-loamy, mixed, mesic Ultic Haploxeralfs
Winston	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Haplorthods
Woodinville	Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents
Zynbar	Medial, frigid Entic Dystrandepts

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