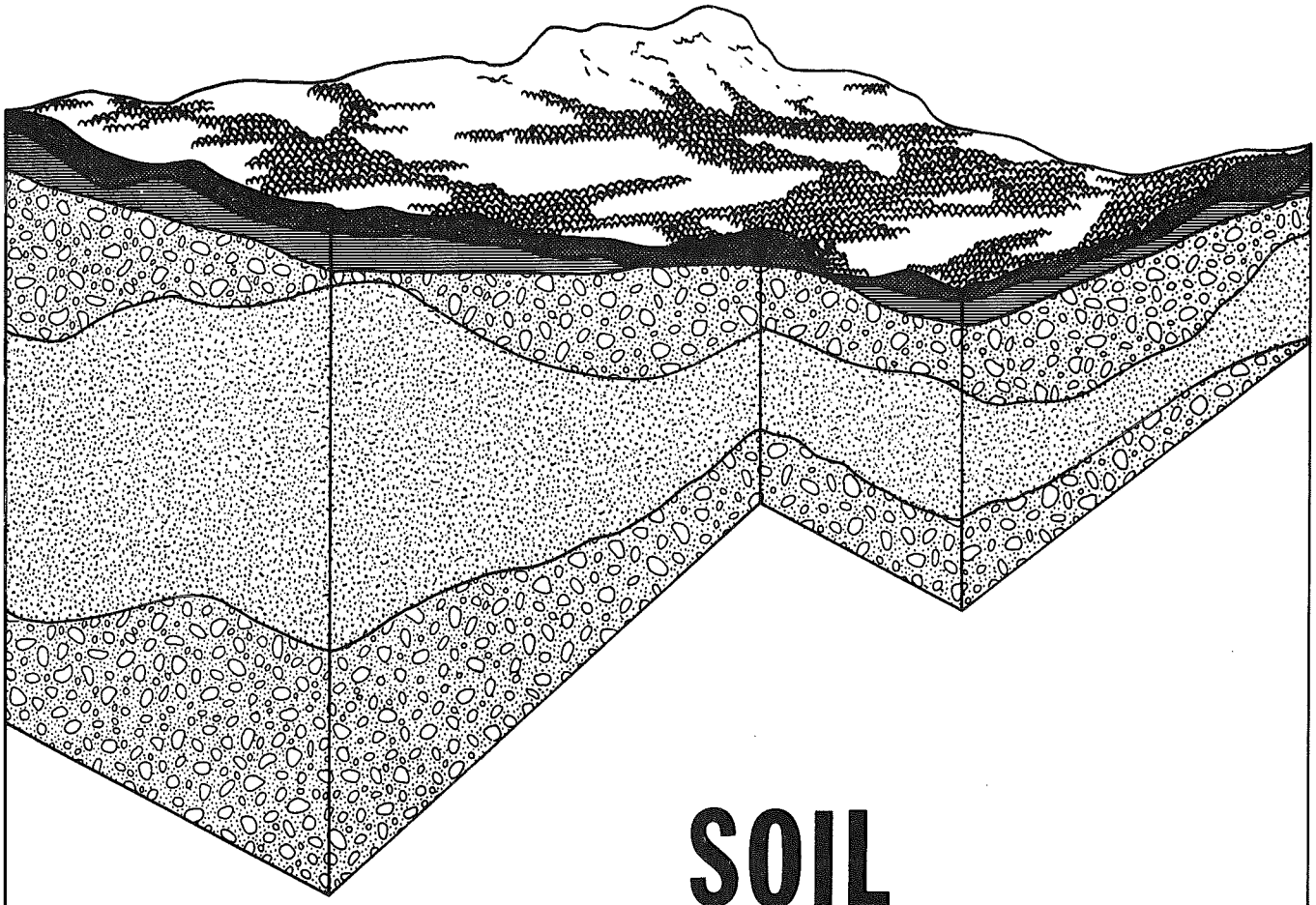
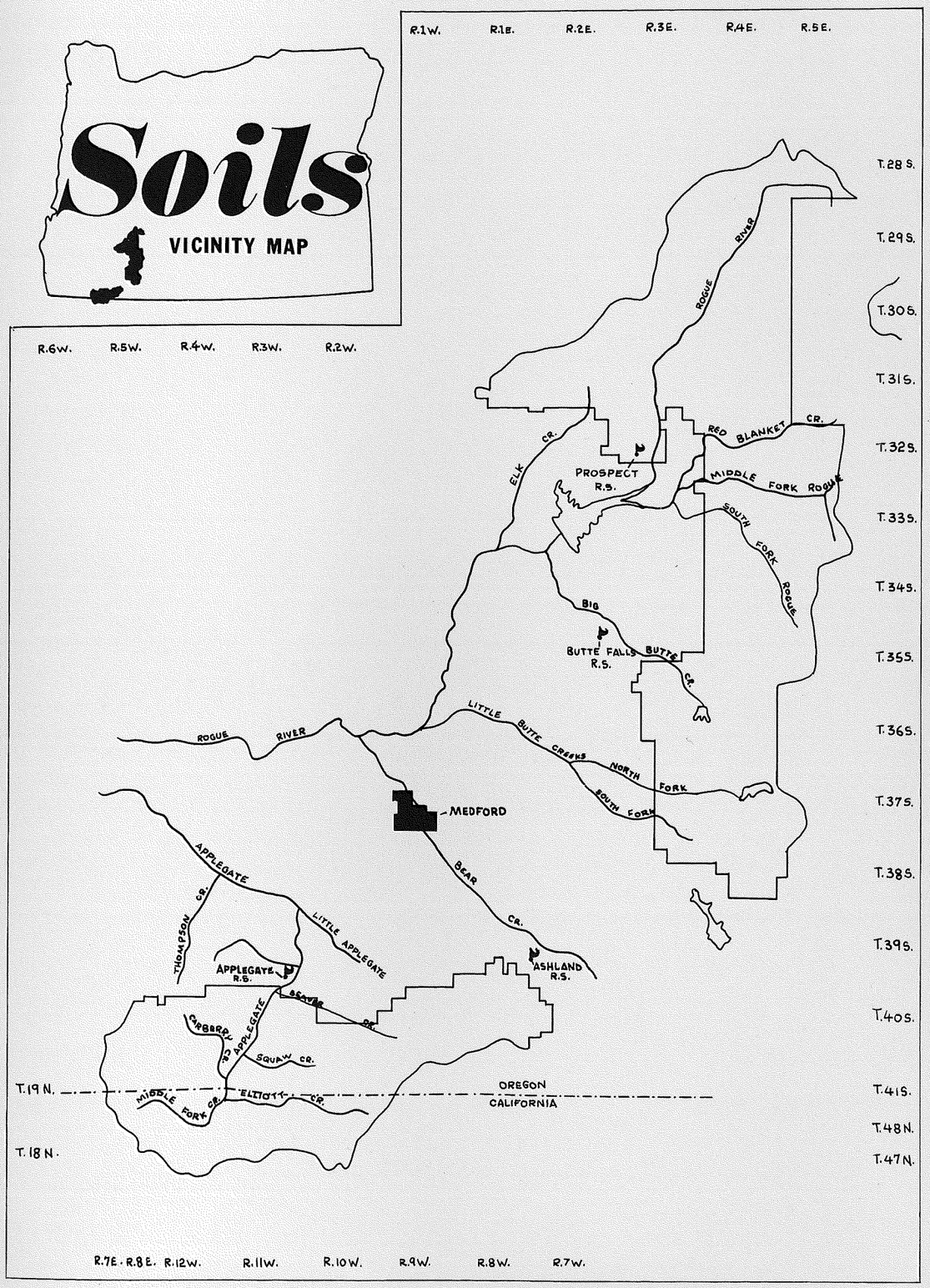


# SOIL RESOURCE INVENTORY

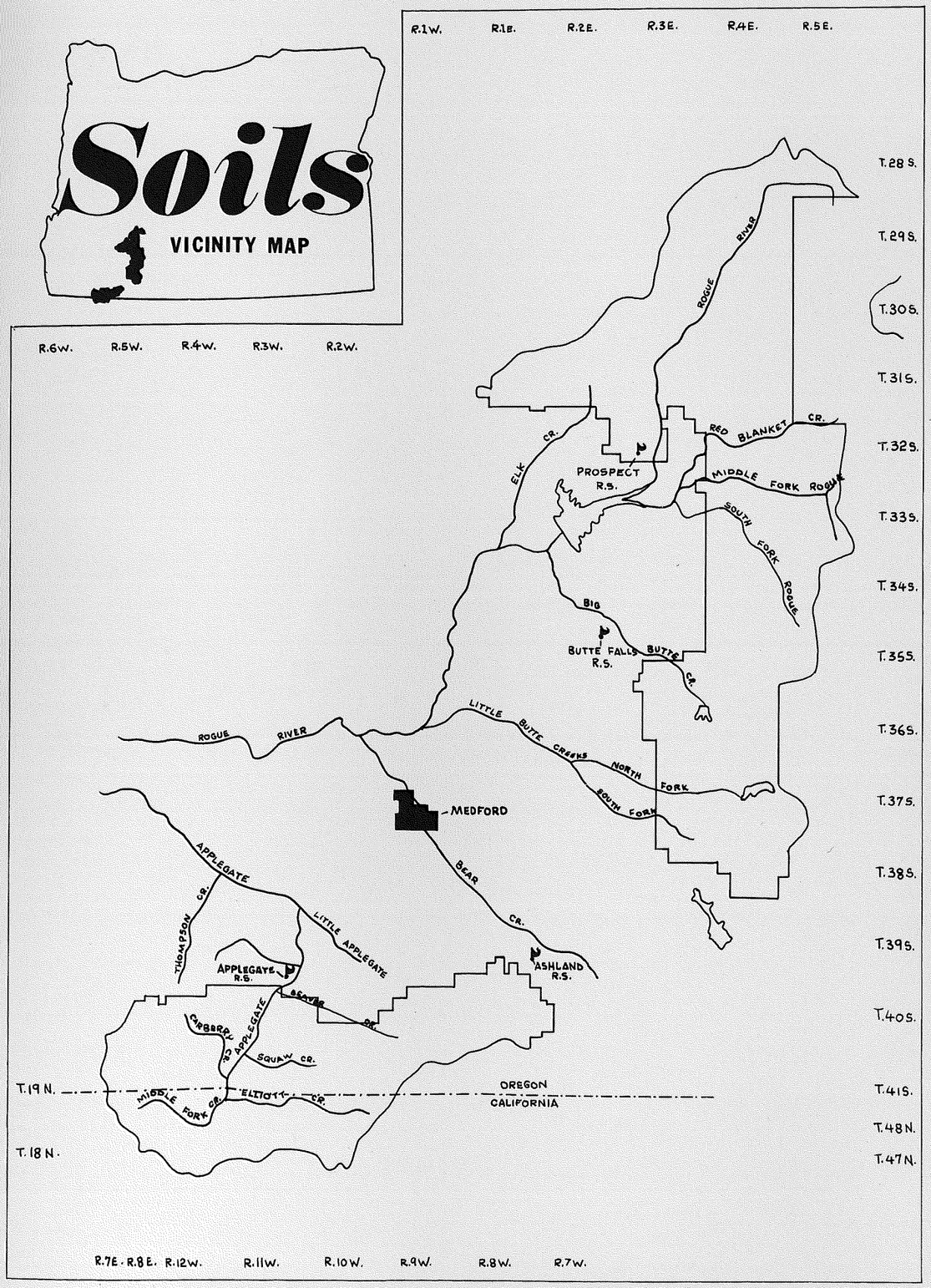
## FOR THE ROGUE RIVER NATIONAL FOREST

U.S. FOREST SERVICE PACIFIC NORTHWEST REGION




## S.R.I. CORRECTIONS

| | |
|---|---|
| Page 5 | Second paragraph: 1st line, change oliving to olivine<br>Third paragraph: 1st line, change oliving to olivine<br>Third paragraph: 2nd line, change oliving to olivine<br>Third paragraph: 4th line, change lave to lava<br>Fourth paragraph: 1st line, change withe to white<br>Eighth paragraph: 1st line, change KJif to Kjif<br>Eighth paragraph: 1st line, change gran to gray<br>Eleventh paragraph: 2nd line, change shite to white |
| Page 12 | P - Principal Forest - Change legend PFME to PSME. |
| Page 69 | Soil 3100 - 5th paragraph, change Soil 3100 <u>if</u> found to <u>is</u> found. |
| Page 70 | Soil 3600 - Same as above. |
| Page 93 | Landtype 13 - 2nd paragraph, 5th line - Add the word poorly after somewhat. |
| Page 111 | Add map Unit No. 15-H and 32-H. |
| Page 112 | Change 174A 65% <u>18A</u> to 65% <u>17A</u>.<br>Complex 120 may not be valid.<br>204-H - Notice <u>35%</u> 26-H and 35% 0, change to <u>65%</u> 26-H. |
| Page 113 | Add Complex No. 239H and 243 (243 is made up 24 and 3 comprising 640 acres). |
| Page 114 | Add Complex No. 421-H. |
| Page 129 | 27-H, 5th column - ABMA, <u>PILO</u> should be <u>PICO</u>. |
| Map 4 | Upper forest zone - add H to 40 in Section 16, R1E.<br>Lower forest zone - eliminate line between units 40 in Section 21, R1E. |
| Map 5 | Lower forest zone - Section 11, T32N, R2E - eliminate number 423 within 429 unit. Change 423 to 426 in Section 11, T31S, R2E (that area surrounded by 41). and 12) |
| Map 6 | Upper forest zone - Section 10, T32S, R4E, change 173H to 173A.<br>Section 29, T31S, R4E, add 31H to blank delineation. |
| Map 7 | Sub-alpine forest zone - Extreme NE corner of map change 174H to 174A. |




SOIL RESOURCE INVENTORY

ROGUE RIVER NATIONAL FOREST
P. O. BOX 520
333 W. 8th STREET
MEDFORD, OREGON 97501

Pacific Northwest Region

June 1977

Prepared By

George J. Badura and Philip N. Jahn
Soil Scientists

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PREFACE

The Soil Resource Inventory for the Rogue River National Forest is designed to provide information to aid in multiple use management as directed by Public Law 86-517. The law states that the National Forests are to be administered to achieve and maintain in perpetuity a high level of annual or regular periodic output of the various renewable forest resources without impairing the productivity of the land.

This report was developed and prepared by George J. Badura and Philip N. Jahn, Soil Scientists, during the period between 1974 and 1976.

## GENERAL INTRODUCTION TO THE SOIL RESOURCE INVENTORY AND ITS POTENTIAL USES

The Soil Resource Inventory provides an extensive classification of land areas into individual units possessing similarities in soil, bedrock, climate, topography and vegetation. These units are termed Landtype Units and are the basis for the interpretations provided in this report. Although major emphasis is placed upon soils, a Landtype Unit is not equivalent to a soil unit. A Landtype Unit is the product of the interaction of three variables and may be viewed as follows:

LANDTYPE* = Soil Characteristics + Physiographic Characteristics + Vegetative and Climatological Characteristics.

A significant change in one or more of the variables will result in a different Landtype Unit.

The Soil Resource Inventory (SRI) has its primary use at the planning level. Soils, landforms, environmental zones and bedrock characteristics are defined at an intensity sufficient to help develop resource management policies and basic plans. Due to the reconnaissance nature of this survey, sufficient detail for use in high-intensity, small-area projects is generally lacking. These projects require on-site investigations by various technical specialists, including soil scientists.

There are many uses for the information in this report. Some are quite simple and apparent, while others have not yet been conceived. The use of this information is achieved best by those with a full understanding of the interrelationships between processes responsible for the formation of earth features.

Examples of how SRI information can be used are listed below:

1. Transportation Planning - This is an area where the Landtype information has key application. Conditions and problems can be met or avoided based on information such as landscape stability, soil depth, soil drainage and/or bedrock type and competency. Roads may be selected that avoid unstable areas, and construction and maintenance costs may be more accurately estimated.

2. Recreation Planning - The SRI information indicates the various Landtype suitabilities and limitations that may apply to ski areas, camping areas, trails, roads and other aspects of recreation development. By knowing the soil suitabilities and limitations, the planner is better able to make plans that are consistent with the capabilities of the land.

* See report section entitled "Definitions Pertaining to the Tables of Interpretation"; specifically Landtype Characteristics.

3. Land Use Plans - The Landtype information in this report should be incorporated into the land use plans. As an example of application, the soil areas in this report can provide a map to show the critical soil areas and their associated problems. These problems are discussed for individual soils and land areas. This is the kind of information that will support the policy and directives and assist in land use. Another example of use would be to color the maps in the Atlas to illustrate various soil management relationships such as erosion and site index.

4. 5-Year Action Plan - This report provides information on the relative susceptibility of soil and other resource damage from timber harvest, road construction and other timber-related activities. Provided also is information on regeneration problems and erosion control requirements.

5. Timber Management Plan - The Landtype information can suggest direction and support policy for allowable cut determinations, logging systems, slash disposal methods, operating season and deferred cutting areas. With a better understanding of problems and their location, the cut can be planned so that at a given time, the majority of cutting is not taking place in critical areas. By spreading out and deferring the more critical areas, more time is available for proper road location and design on these areas. Also, within a few years, logging technology may have developed so that harvest methods are compatible with critical areas without causing excessive soil and resource damage.

6. Land Appraisal and Exchange - Soils information should be used for land appraisal and exchange activities. The value of the land is related to such soil factors as texture, depth, drainage, productivity and stability.

7. Environmental Analysis Reports - Any EAR study can find the basic data in the SRI useful. However, additional interpretations may be needed for more specific information concerning Landtypes and their behavior.

8. The following is a list of more specific uses of the report. These uses are adaptable and compatible with the survey data and are well within the scope and intensity of the survey:

   a. Engineering Testing - By using the SRI, more efficient testing can be done. The Landtype maps can be used to determine which soils are most susceptible to certain engineering problems. These problem soils may need more closely spaced testing than soils in which few problems are anticipated.

   b. Reservoir Sites - This report gives information that can be used to determine problems that may be encountered for a reservoir site. The Landtype interpretations will enable the planner to better determine the general suitability of a particular site and the soil characteristics as they affect reservoir uses.



   c. Hydrologic Analysis - The information in the SRI is sufficient to determine a broad hydrologic analysis and water balance on the Forest, and as a basis for comparisons between larger watersheds.

   d. Timber Harvest Methods - Additional facts known about the potential for erosion and landscape stability will encourage selection of timber harvest methods that cause minimum damage to soil and other resources.

   e. Timber Harvest and Road Construction Operating Season - These activities should be scheduled at times when they will cause minimum soil damage. Many soils are subject to damage (compaction, erosion, site deterioration) by timber harvest activities when overly wet or excessively dry.

   f. Erosion Control - Since there is wide variability in soil texture, depth, structure, permeability, drainage and topography, wide differences also occur in the ability of the soil to resist erosion. Forest soils are rated as to their potential erosion or sediment yield class. The land manager can use this information to determine which areas will need special erosion protective measures. These will need to be developed on a site-by-site basis.

   g. Recreational Developments - Several kinds of information are available in this report to assist in selecting favorable sites for campground development. Among these are soil and landform properties and characteristics, specific ratings of filter drainage field suitability, the relative resistance of soil and vegetation to site deterioration, and indications of special problems which may be encountered.

## Key to Using the Report

For proper utilization of this report, it is essential that the users know both the Landtype number 1/ and the Environmental Zone 2/ in which it occurs. The Tables of Interpretation and the maps within the report are organized in such a way that this is easily accomplished. The first column of each table contains the Landtype numbers. The Environmental Zones are identified in the second column of the tables to which they are applicable. If the Environmental Zone does not affect a particular interpretation, or if the Environmental Zone is compensated for within the Landtype number, it will not occur in the second column.

How To Use The SRI:

A. To derive soil and Landtype information concerning an area proposed for future management or development:

1. Locate the proposed area on the map.

2. List all map unit numbers 1/ occurring within the proposed area.

3. Determine from the map which Environmental Zone encompasses the proposed area. List it for future reference.

4. Divide the map units which are complexes 1/ into Landtype components by referring to the "List of Landtype Units and Complexes". List Landtypes and appropriate percentages.

5. Turn to the "Tables of Interpretation" and locate the involved Landtype Unit. (These are found in the first column of each table.)

6. Locate the appropriate Environmental Zone. (These are listed in the second column of only the tables to which they pertain.)

7. Read the desired interpretations for the Landtype(s) and the appropriate Environmental Zone. Where the Environmental Zone is not listed in the second column, read interpretations pertaining to the Landtype(s) as listed.

1/ See the Mapping Unit Definitions (Appendix).

2/ For definition see page 11, Environmental Divisions within the Rogue River National Forest.



B. To locate areas possessing similar specific problems and potentials; i.e., Landtypes with a high erosion hazard or Landtypes with a high timber-producing potential. If, for example, the objective is to locate all areas on a Ranger District which have a high regeneration potential, the following procedure should be used:

1. In the Table of Timber Interpretation, go down the column dealing with regeneration potential. Whenever a rating of "HIGH" is encountered, list the Landtype and the Environmental Zone which corresponds to the rating. (On other tables when the Environmental Zone does not appear in the second column, list only the Landtype number.)

2. When all Landtypes and corresponding Environmental Zones with a rating of "HIGH" have been recorded, turn to the List of Landtypes and Complexes to determine which complexes contain components with ratings of "HIGH". List each appropriate complex and the percentage of each complex which has a "HIGH" rating for regeneration. The result should be a list of Landtypes and Complexes with corresponding Environmental Zones which have a high potential for regeneration.

3. Turn to the maps. First, identifying the proper Environmental Zone (where applicable) then locate Landtypes and complexes which were listed in step two, above. If desired, these areas may then be colored and/or planimetered for acres' figures.

# GEOLOGIC AND PHYSIOGRAPHIC ASSOCIATIONS

# ON THE

# ROGUE RIVER NATIONAL FOREST

## GEOLOGY AND PHYSIOGRAPHY 1/

Geologically, the Rogue River National Forest (RRNF) is quite diverse. It contains some of the oldest, as well as some of the most recent, rock formations in the Pacific Northwest.

The southwestern portion of the Forest (which includes the Applegate Ranger District and the western section of the Ashland Ranger District) is located within the Siskiyou Mountains. The Siskiyous form part of a larger geologic-physiographic unit known as the Klamath Mountain Province, a region of very ancient and highly altered rock formations. The Siskiyou Mountains' portion of the Forest includes schists, phyllites, and "greenstones". Some of these rocks may date to the Paleozoic Era. These metamorphosed marine sediments and volcanics were possibly associated with some phase of sea-floor spreading or plate-tectonics. This explains the presence of various intrusions or emplacements of magma beneath the earth's crust. These intrusions have been exposed through subsequent uplift and erosion. Some are composed of granite-like rocks while others are composed of peridotite rocks, many of which have been altered to serpentine. The entire Siskiyou Mountain region has undergone intense geologic deformation. The metamorphic rock structures are often nearly vertical. Many rock units are further weakened by intense faulting and shearing. The drainage system has created a rugged topography of steep, generally east-west trending ridges and narrow, high-gradient stream channels. At higher elevations there is visible evidence of late Pleistocene glaciation.

The northeastern portion of the Forest lies along the west slope of the Cascade Range. Much of the Prospect Ranger District, as well as smaller sections of the Butte Falls and Ashland Ranger Districts, is located in what is known as the Western Cascades Province. These mountains are comprised of volcanic sediments and flows associated with the initial buildup of the Cascades during the Tertiary Period. Rock formations typically include beds of volcanic ash (tuff), massive flows of andesite lava and layers of breccia and agglomerate. Relatively soft rock types are often overlain by more resistent material. Uplift and stream erosion has produced a topography of high relief. Water has carved generally steep-walled canyons with rocky escarpments near or at the top of many intervening ridges. Grizzly Canyon, located in the south Fork Little Butte Creek drainage, is an example of this.

To the east, the remainder of the Forest is located within the High Cascades Province. This region has a relatively youthful geologic history. Vulcanism during the Pliocene and Pleistocene Epochs resulted in numerous flows of basalt and andesitic basalt, as well as deposits of cinder. The explosive collapse of nearby Mount Mazama (Crater Lake) about 7,000 years ago left a thick blanket of pumice over much of the

1/ Many of the assertions involving physiography and geology in this report are generalized from the works of Baldwin and of McKee which are cited in the bibliography following this report.

Prospect Ranger District. Topographically, the High Cascades Province has the character of a broad, upland plateau. When steep relief occurs, it is usually in the form of a prominent volcano like Mount McLoughlin or a glacially-carved canyon such as the Middle Fork Canyon of the Rogue River.

The most distinctly recognizable geomorphic processes occurring on the Forest are fluviation (degradation of the land surface by running water), glaciation and mass wasting.

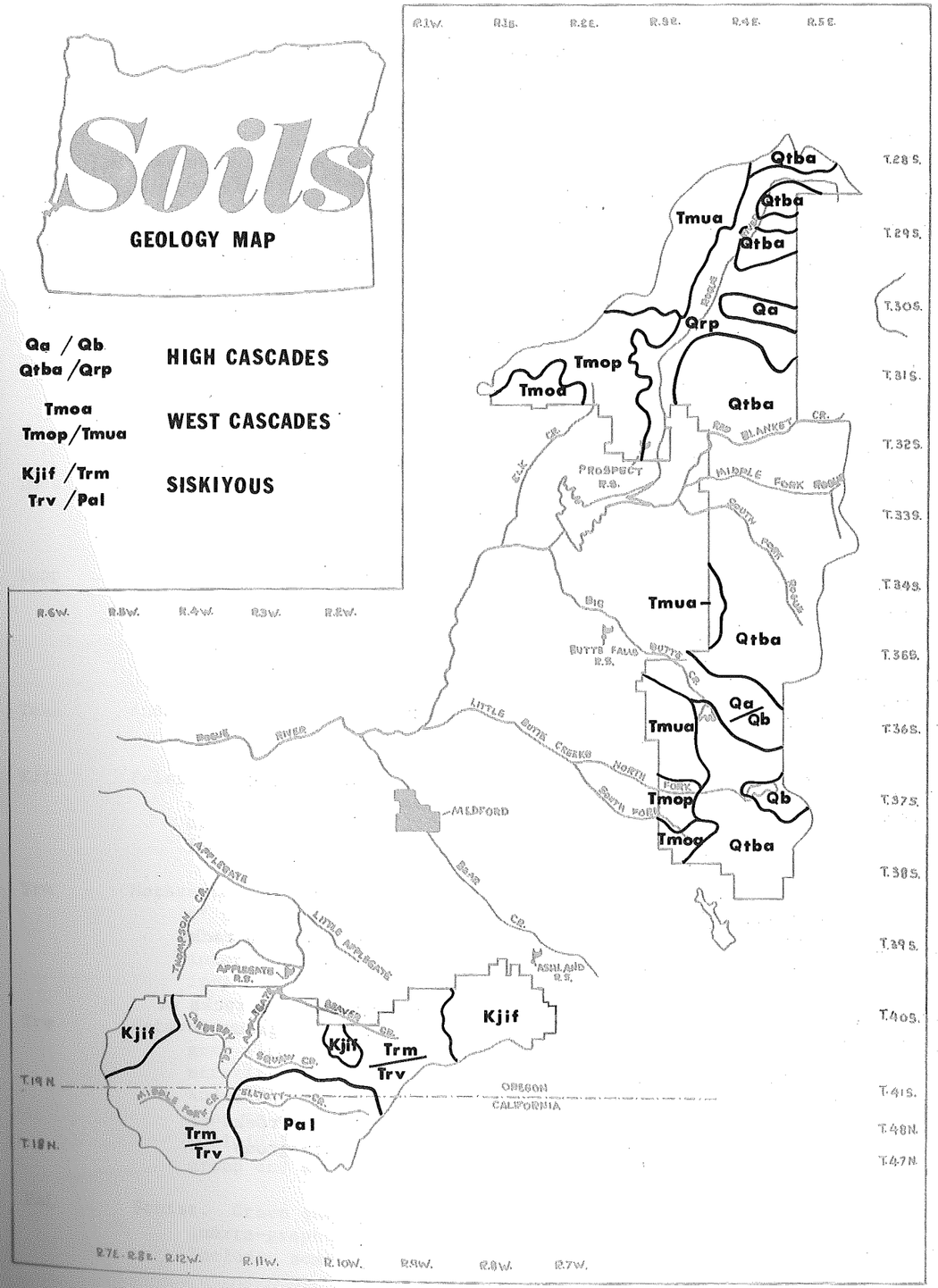
Fluviation is most evident in the long, steep and rugged slopes of the Siskiyou Mountains and least evident on the relatively flat plateau surfaces typifying the High Cascades. Glaciation has occurred over significantly large areas of all three physiographic provinces comprising the RRNF, but is most widespread at elevations above 5,000 feet (1,500 m) in the High Cascade Province. The process of glaciation has a dominating effect upon the soils developing under its influence which generally supercedes influences of geologic materials. The process of mass wasting has been prominent in the development of the Western Cascades and Siskiyou Mountains but is only locally represented in the High Cascades.



# Soils

## GEOLOGY MAP

| | |
|---|---|
| Qa / Qb<br>Qtba /Qrp | HIGH CASCADES |
| Tmoa<br>Tmop/Tmua | WEST CASCADES |
| Kjif /Trm<br>Trv /Pal | SISKIYOUS |



LEGEND

| | | |
|---|---|---|
| Qrp | Recent | Pumice and Ash |
| Qa | Pleistocene to Recent | Mt. Mazama andesite |
| Qb | | Basalt |
| Qtba | Pliocene - Pleistocene | Basalt and andesite |
| Tmua | Miocene | Andesite |
| Tmoa | Oligocene | Andesite |
| Tmop | Miocene | Pyroclastic rocks |
| Kjif | Cretaceous Jurassic | Felsic intrusive rocks |
| Trm | Triassic | Metasedimentary rocks of Applegate group |
| Trv | | Metavolcanic rocks of Applegate group |
| Pal | Pre-Silurian | Schist |



EXPANDED LEGEND OF GEOLOGY

Qa — Mt. Mazama Andesites. Mostly pale gray to black, platy porphyritic andesite flows with interbedded flow breccia, explosion breccia, glacial moraines and glacial fluvial sand.

Qb — Basalt. Light to dark gray dense to open-textured oliving basalt and olivine-bearing andesite forming lava domes and intracanyon flows.

QTba — Basalt and Andesite. Gray open-textured oliving basalt and oliving-bearing andesite and subordinate dense porphyritic pyroxene andesite in flows and subordinate breccia forming lave domes, cones and intracanyon flows.

Qrp — Pumice and Ash. Unconsolidated withe to buff dacite ash-flow deposits consist of rudely sorted granular ash and small pumice lapilli. The ash-flow deposits consist of unsorted ash and pumice blocks in the valleys and flats.

Tmoa — Andesite. Massive dark gray porphyritic basaltic andesite and some gray prophyritic andesite flows and breccia interbedded with pyroclastic rocks.

Tmop — Pyroclastic rocks. Poorly bedded light-colored dacitic and andesitic lapilli tuff, welded tuff and breccia, stratified tuff and tuffaceous sandstone and conglomerate, and dacite flows and domes. Intercalated flows of andesite and basalt.

Tmua — Andesite. Gray porphyritic pyroxene andesite and dark-gray aphanitic to porphyritic basaltic andesite.

KJif — Felsic intrusive rocks. Light gran, fine to coarse grained granitoid rock ranging from granite through diorite with diorite and quartz diorite the most abundant types. Includes some gabbro.

Trm — Metasedimentary rocks of Applegate group. Layers and lenses of tuffaceous metasedimentary rocks, grayish white chert, black argillite, marble, quartzite and pebbly conglomerate interbedded with metavolcanic rocks of the Applegate Trv. Includes some ultramafic intrusive bodies.

Trv — Metavolcanic rocks of Applegate group. Pale green to greenish-gray altered flows and some tuff breccia, flow breccia, stratified tuff and related intrusive rocks mostly of andesitic or basaltic composition. Flows are commonly fine to coarse grained porphyritic vesicular or amygdaloidal. Includes some gneiss and schist from Applegate group and some ultramafic intrusive rocks.

PAL — Schist. Green quartz-epidote-chlorite schist, dark gray quartz-graphite schist and some shite sericite schist. Includes some ultramafic intrusive rocks.

GEOLOGIC AND PHYSIOGRAPHIC PROFILE
OF THE
ROGUE RIVER NATIONAL FOREST

# ENVIRONMENTS

# OF THE

# ROGUE RIVER NATIONAL FOREST

ENVIRONMENTAL DIVISIONS
WITHIN THE
ROGUE RIVER NATIONAL FOREST

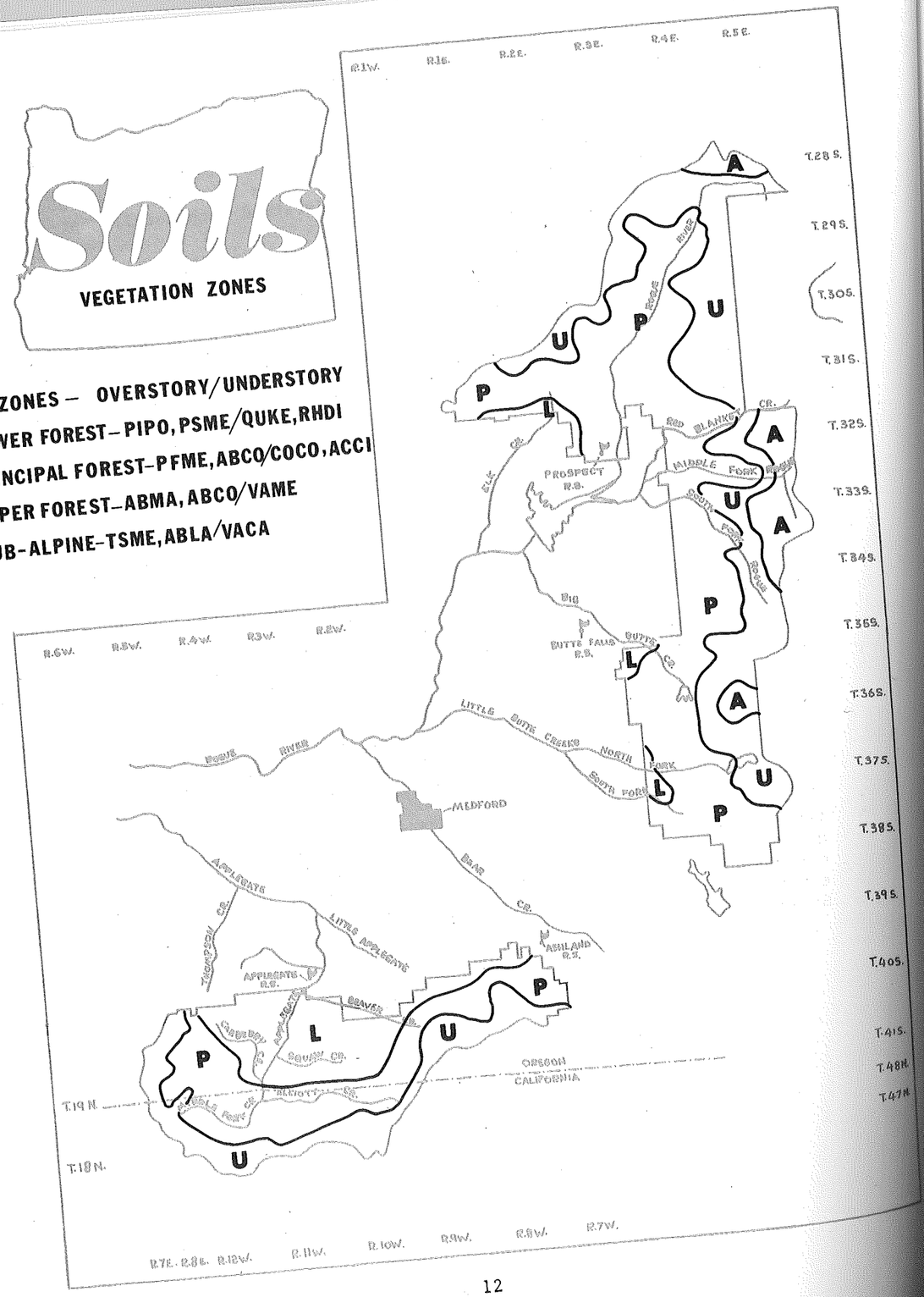
Management interpretations in the report are based upon how a Landtype, in its natural environment, is likely to react to various management-related operations and activities. To make these interpretations on a given area, it is essential to know and understand such details as:

> (1) The amount and intensity of precipitation that occurs, (2) the times of year that the precipitation is most likely to occur, (3) whether the precipitation occurs dominantly in the form of snow or in the form of rain, (4) whether a lasting winter snow pack develops or whether substantial portions of the snow pack may be lost, subject to periodic warm winter rains, and (5) the way in which these precipitation and elevation related characteristics affect the length of the growing season. These details, in turn, affect interpretations involving sediment yield, brush competition, reforestation, erosion control, intrinsic productivity, stability and many more.

For the purpose of arriving at meaningful interpretation, four environmental zones are defined and mapped in this report. These zones are based upon vegetation as it reflects climate, elevation, aspect and in local areas, soil conditions. The zones are broad in scope and are not intended to be strictly vegetation, precipitation or elevation zones, but rather a combination of these environmental factors into zones helpful to a wide variety of management activities. In order of increasing elevation and precipitation, the four environmental zones are:

I. Lower Forest Zone (Siskiyous, trace in Cascades)
II. Principal (Middle) Forest Zone (Siskiyous and Cascades)
III. Upper Forest Zone (Siskiyous and Cascades)
IV. Sub-Alpine Forest Zone (Cascades, trace in Siskiyous)

From the Siskiyou Mountains to the Cascade Mountains, specific vegetation species may differ within a particular zone; however, these differences are relatively minor at this inventory level and do not hinder the use of these zones in providing management guidelines. Separate, detailed environmental zone descriptions are offered for the Cascades and the Siskiyous in their respective portions of this report.






## CLIMATE 1/

A wide variation in climate and elevation exists on the Rogue River National Forest. To summarize the range between extremes, the average annual temperature ranges from 52.1° F (11.1° C) at Ashland to 37.5° F (3° C) at Crater Lake National Park Headquarters. The average annual precipitation ranges from 19.98 inches (50.74 cm) at Ashland to 68.30 inches (173.48 cm) at Crater Lake Headquarters. Finally, the average April first snow pack ranges from 0 at the City of Ashland to 151 inches (384 cm) deep at Crater Lake Headquarters. Elevations on the Forest range from about 1,500 feet (460 meters) near Star Ranger Station and also near the town of Trail to nearly 10,000 feet (3,000 meters) at the top of Mt. McLoughlin in the High Cascades.

Winter Conditions - During the fall and winter, low pressure centers form in the North Pacific Ocean. Counterclockwise air circulation around these low pressure systems result in a prevailing southwesterly air flow. This results in a wet season from mid-October through mid-April. Between 70 and 80 percent of the total precipitation falls during the fall and winter months, November through March, and 15 to 25 percent during the spring months. The forced ascent of the air masses from the west causes them to give up moisture. Since the rain-bearing potential of these marine winds has already been greatly reduced by passage over the Coast Range, the precipitation on the northeast slope of the Siskiyous and the west slope of the Cascades is only from one-half to one-third as great as for the Coast Range.

Snowfall is the heaviest in the higher levels of the Cascades. Snow course averages show that above 4,500 feet (1,400 m), on-the-ground snow depths are approximately 60 to 160 inches (150-400 cm) and persist from early December to the latter part of April and May.

Flooding occurs during some winters in the major valleys due to a combination of: (1) moderate to heavy snow pack at relatively low elevations, (2) a period of several days of moderate to heavy rain; and (3) warm southerly winds. Except for periodic flooding during some winters, annual peak stream discharge occurs between April and June, the period of most rapidly melting snow. Moderate to heavy rains falling on a heavy snow pack constitutes a major flood threat.

Summer Conditions - During mid to late spring, low pressure centers move further north and are gradually replaced by high pressure systems with their clockwise circulation of air, resulting in a prevailing northwesterly flow of air. The air becomes warmer and dryer as it moves inland, resulting in a dry season beginning in late spring and reaching a peak in summer. Only about 5 percent of the annual average precipitation occurs during the summer months.

1 Gilbert L. Sterns, Climate of the States; Oregon, U.S. Weather Bureau, Washington, D.C., No. 60-35, February 1960.

The warmest weather, lowest relative humidity and greatest danger of forest fires occur during periods of easterly winds. Humidities as low as 10 to 20 percent may be recorded during the warmest part of the day.

The Western Cascades and Siskiyou Mountains have a normal dry period each summer. Damaging drought conditions result when the dry period begins too early in the spring. A marked deficiency in moisture during spring and early summer results in poor survival of tree seedlings, grass seedings and an extended fire season.

Thunderstorms occur most frequently during the summer months and each year a considerable number of forest fires are started by lightning strikes. Precipitation from these storms is generally light except at elevations above 5,000 feet (1,500 m) where showers tend to be more intense and more frequent.

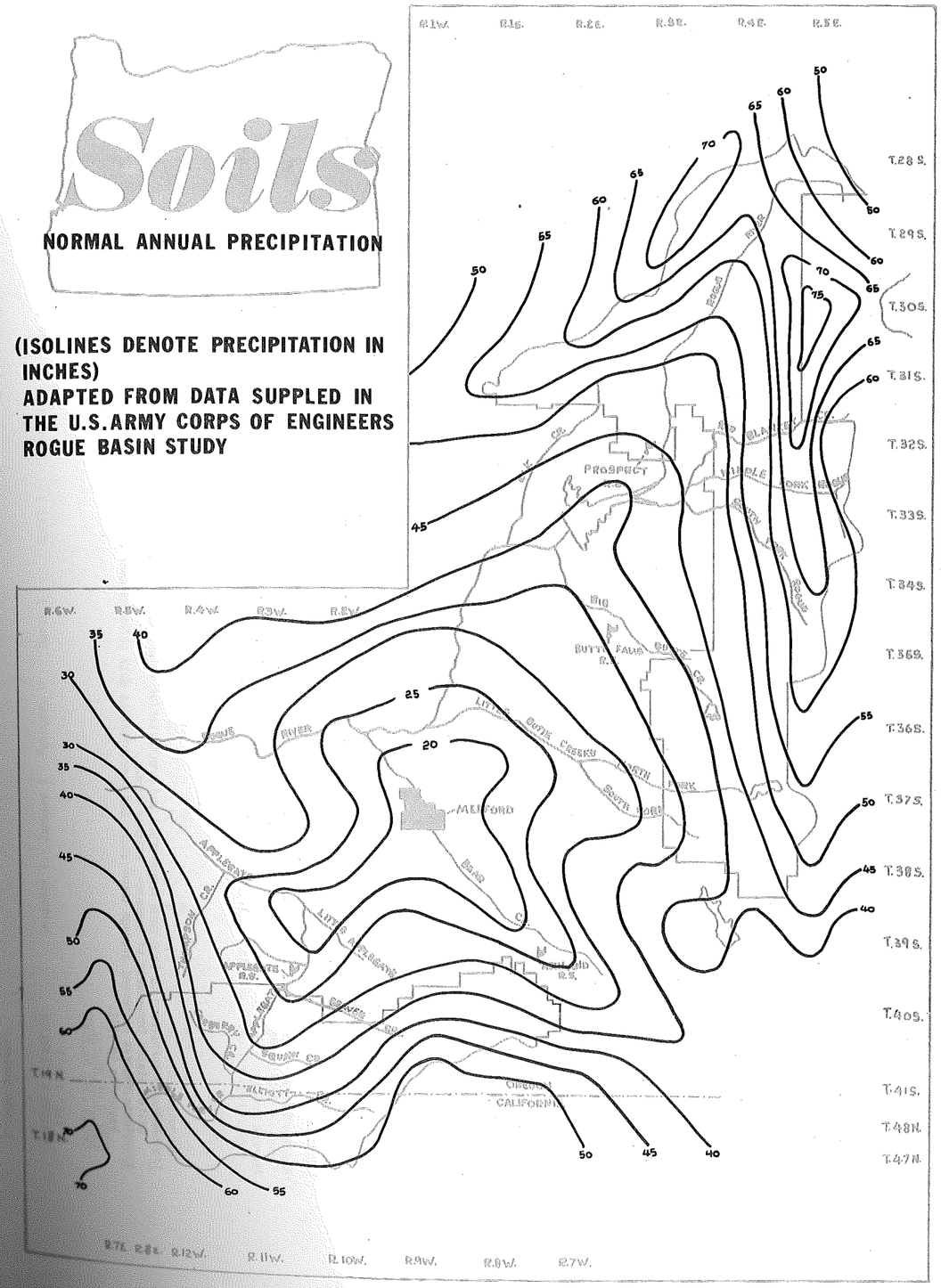
Following are a precipitation map, climatological data from local stations, and summarized snow survey information taken near or within the Rogue River National Forest.



# Soils

## NORMAL ANNUAL PRECIPITATION

**(ISOLINES DENOTE PRECIPITATION IN INCHES)**
**ADAPTED FROM DATA SUPPLED IN THE U.S. ARMY CORPS OF ENGINEERS ROGUE BASIN STUDY**



## TEMPERATURE AND PRECIPITATION AVERAGES 1/

| STATION | | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ashland, Oregon | | | | | | | | | | | | | | |
| Average Temp. | °F | 37.4 | 41.6 | 44.4 | 49.4 | 55.8 | 62.1 | 69.0 | 67.8 | 62.6 | 52.6 | 43.9 | 38.2 | 52.1 |
| | °C | 3.0 | 5.3 | 6.8 | 9.6 | 13.2 | 16.7 | 20.5 | 19.8 | 17.0 | 11.4 | 6.6 | 3.4 | 11.1 |
| Average Precip. | in. | 2.87 | 1.91 | 1.76 | 1.28 | 1.68 | 1.23 | .33 | .38 | .60 | 1.95 | 2.75 | 3.24 | 19.98 |
| | cm. | 7.28 | 4.85 | 4.47 | 3.25 | 4.26 | 3.12 | .83 | .96 | 1.52 | 4.95 | 6.98 | 8.22 | 50.74 |
| Crater Lake N.P. Headquarters, Oregon 2/ | | | | | | | | | | | | | | |
| Average Temp. | °F | 25.2 | 28.5 | 26.4 | 30.0 | 38.2 | 45.9 | 54.7 | 54.6 | 49.7 | 41.0 | 31.1 | 25.4 | 37.5 |
| | °C | 3.7 | 1.9 | 3.1 | 1.1 | 3.4 | 7.7 | 12.6 | 12.5 | 9.8 | 5.0 | - .5 | - 3.6 | 3.0 |
| Average Precip. | in. | 11.63 | 6.13 | 7.6 | 4.58 | 2.51 | 2.0 | .35 | 1.40 | 2.02 | 4.78 | 11.95 | 13.14 | 68.30 |
| | cm. | 29.54 | 15.57 | 19.32 | 11.63 | 6.37 | 5.08 | .88 | 3.55 | 5.13 | 12.14 | 30.35 | 33.37 | 173.48 |
| Fish Lake, Oregon | | | | | | | | | | | | | | |
| Average Temp. | °F | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | °C | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average Precip. | in. | 6.32 | 5.10 | 5.53 | 3.57 | 3.37 | 2.41 | .27 | .36 | 1.56 | 3.77 | 5.33 | 7.0 | 44.59 |
| | cm. | 16.05 | 12.95 | 14.04 | 9.06 | 8.55 | 6.12 | .68 | .91 | 8.0 | 9.57 | 13.53 | 17.78 | 113.25 |
| Howard Prairie, Or. 2/ | | | | | | | | | | | | | | |
| Average Temp. | °F | 27.6 | 32.9 | 34.0 | 38.0 | 46.4 | 49.0 | 61.4 | 60.6 | 55.2 | 46.2 | 36.0 | 28.5 | 43.4 |
| Average Precip. | in. | 5.79 | 2.63 | 3.70 | 2.51 | 1.64 | 1.05 | .20 | .80 | .64 | 2.56 | 5.87 | 6.92 | 34.22 |
| | cm. | 14.70 | 6.68 | 9.39 | 6.37 | 4.16 | 2.66 | .5 | 2.03 | 1.62 | 6.5 | 14.9 | 17.57 | 86.91 |
| Medford, Airport, Or. | | | | | | | | | | | | | | |
| Average Temp. | °F | 37.2 | 42.6 | 47.2 | 52.3 | 58.7 | 64.9 | 71.8 | 71.1 | 64.4 | 54.5 | 44.2 | 38.5 | 54.0 |
| | °C | 2.8 | 5.8 | 8.4 | 11.2 | 14.8 | 18.2 | 22.1 | 21.7 | 18.0 | 12.5 | 6.7 | 3.6 | 12.2 |
| Average Precip. | in. | 2.51 | 2.02 | 1.52 | 1.19 | 1.22 | .97 | .17 | .19 | .65 | 1.91 | 2.67 | 3.13 | 18.15 |
| | cm. | 6.37 | 5.13 | 3.86 | 3.02 | 3.09 | 2.46 | .43 | .48 | 1.65 | 4.85 | 6.78 | 7.95 | 46.1 |
| Prospect, Or. | | | | | | | | | | | | | | |
| Average Temp. | °F | 35.2 | 38.3 | 42.0 | 47.9 | 53.9 | 58.9 | 65.9 | 65.1 | 60.3 | 51.3 | 42.2 | 37.1 | 49.8 |
| | °C | 1.7 | 3.5 | 5.5 | 8.8 | 12.16 | 14.9 | 18.8 | 18.3 | 15.7 | 10.7 | 5.6 | 2.8 | 9.8 |
| Average Precip. | in. | 6.59 | 4.71 | 4.35 | 3.05 | 2.64 | 1.80 | .27 | .32 | 1.02 | 3.97 | 5.80 | 7.12 | 41.64 |
| | cm. | 16.73 | 11.96 | 11.04 | 7.74 | 6.7 | 4.57 | .68 | .81 | 2.59 | 10.08 | 14.73 | 18.08 | 105.76 |

1/ Averages correspond to long term temperature and precipitation values as compiled by the United States Department of Commerce, Weather Bureau.
2/ These figures represent average temperature and precipitation data gathered over a 10-year period beginning in 1962.



## SNOW PACK AVERAGES 1/

10 Year Averages

| STATION / ELEVATION (ft. & (m.) | | December 1 | January 1 | February 1 | March 1 | April 1 | May 1 | June 1 | July 1 |
|---|---|---|---|---|---|---|---|---|---|
| CRATER LAKE NATIONAL PARK HEADQUARTERS | | | | | | | | | |
| 6450' (1966 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | 74 | 108 | 133 | 151 | 127 | 64 | 8 |
| | (cm.) | * | 188 | 274 | 338 | 384 | 323 | 163 | 20 |
| FISH LAKE | | | | | | | | | |
| 4865' (1483 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | 23 | 27 | 36 | 30 | 15 | -- | -- |
| | (cm.) | * | 58 | 69 | 91 | 76 | 38 | -- | -- |
| GRAYBACK PEAK | | | | | | | | | |
| 6000' (1829 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | * | 48 | 62 | 69 | * | * | -- |
| | (cm.) | * | * | 122 | 157 | 175 | * | * | -- |
| HOWARD PRAIRIE 2/ | | | | | | | | | |
| 4500' (1372 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | 12 | 18 | 22 | 20 | * | -- | -- |
| | (cm.) | * | 30 | 46 | 56 | 51 | * | -- | -- |
| SEVEN LAKES BASIN | | | | | | | | | |
| 6800' (2073 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | * | 82 | 130 | 134 | * | * | * |
| | (cm.) | * | * | 208 | 330 | 340 | * | * | * |
| SISKIYOU SUMMIT | | | | | | | | | |
| 4630' (1411 m.) | | | | | | | | | |
| Average total snow accumulation | in. | * | 12 | 14 | 14 | 5 | -- | -- | -- |
| | (cm.) | * | 30 | 36 | 36 | 13 | -- | -- | -- |
| WAGNER BUTTE | | | | | | | | | |
| 6900' (2103 m.) | | | | | | | | | |
| Averate total snow accumulation | in. | * | * | 32 | 40 | 44 | * | * | -- |
| | (cm.) | * | * | 81 | 102 | 112 | * | * | -- |

Averages are based on 10 years of data collected by the Soil Conservation Service, United State Department of Agriculture.
1/ Measurements represent the amount of snow on the ground as of the first day of the month.
2/ Averages for Howard Prairie represent 9 years of data.
* Snow pack can be expected on these dates most years, however, insufficient data exists to estimate average depths.

# GENERAL DISCUSSION OF SOILS

# ON THE

# ROGUE RIVER NATIONAL FOREST

## SOILS OF THE ROGUE RIVER NATIONAL FOREST, AN OVERVIEW

The Rogue River National Forest contains an exceptionally wide variety of soils. This diversity is directly related to the extremely complex geologic composition and geomorphic history of the area. Soil mineralogy, which affects both texture and fertility, is related specifically to the original parent rock material. This Forest contains such geologic materials as mica schist, limestone, argillite, greenstone, serpentine, granite, basalt, rhyolite, volcanic tuffs and recent ash flow materials, to name a few. The arrangement of soil types upon the land surface which affects manageability, is related specifically to the complexity of the topography. This, in turn, is the result of the types of geomorphic processes affecting topographic development and the length of time that these processes have been active.

The soils of the Klamath Mountain Physiographic Province, Siskiyou Range, are dominantly of mixed minerology. In addition, most soils are shallow, medium textured and contain high percentages of rock fragments. These generalizations do not all hold true in schist terrane, granitic terrane and areas which have been subjected to repeated glaciation. Soils developing from mica or graphite schists tend to have a micaeous minerology while soils developing in granitic terrane are generally coarse textured. Very deep soils also occur but are usually limited to ancient mass wasted land surfaces glacial deposits or toe slope positions subjected to long term colluvial build-up. The Siskiyou Mountains are topographically rugged and geologically diverse. Because of this, soil types, combinations and arrangements within this province are probably the most complex in the Pacific Northwest.

Soils of the Western Cascades Physiographic Province have, for the most part, mixed minerologies. These soils generally have moderate depths, medium to fine texture, and contain a wide range of rock fragment percentages. Very deep soils occur in association with glacial and glacio-fluvial deposits, colluvial toe slope and mid slope deposits and ancient mass wasted surfaces. Deep clayey soils possessing montmorillonitic minerologies tend to develop in slump basins of old landslides originating from tuffaceous bedrock materials. These areas generally have restricted soil drainage. Soil types and their arrangements upon the land surfaces within the Western Cascades are generally not as complex as in the Siskiyou Mountains.

The High Cascade Physiographic Province is dominated by the effects of Alpine glaciation and recent vulcanism. Both of these processes tend to have an overall moderating effect upon topography producing generally smooth, gently inclined surfaces. The soils of the High Cascades are generally of mixed minerologies. Average soil depths are much greater than might be expected in the other provinces on the Forest and textures are generally medium to coarse. Many soils are relatively free of rock, particularly in unglaciated portions of the province; while soils forming in glacially derived materials can contain very large amounts of rock fragments. Ashy and cindery soils also occur in association with ash flow deposits on the flanks of the former Mount Mazama and also occur in

association with eolian deposits of ash originating from the volcano's eruption. Ash dominated soils are quite extensive in the northeast portion of the Forest surrounding Crater Lake National Park. Soil types and arrangements within this province are by far the least complex on the Forest.

Soils derived from glacially deposited materials are relatively similar in all three physiographic provinces comprising the Forest. Nearly all possess mixed minerologies, are moderately deep to deep, have sandy textures and contain high percentages of rounded rock fragments. In addition, most of these soils are forming over compacted glacial till. This material may be quite hard and have a resemblance to concrete. It is generally impervious to water. Most other characteristics of soils forming in these materials are also similar.



# DEFINITIONS PERTAINING

# TO THE

# TABLES OF INTERPRETATIONS

# FOR THE

# CASCADES AND SISKIYOU MOUNTAINS

## EROSION AND HYDROLOGIC INTERPRETATIONS

Erosion and hydrologic interpretations include erosion and water management interpretations. Interpretations for erosion include the two major kinds of erosion--surface and mass movement. Surface erosion pertains only to surface soil loss by runoff and overland flow. Mass movement pertains to all types of soil and bedrock movement which occurs below the soil surface such as landslips, slumps, slides, rockfall and land flow.

### Natural Stability

This rating is based on the relative stability of the Landtype units as they occur in the natural state. This includes any movement or loss other than surface erosion, by slumps, slides and all kinds of deep-seated failures. This rating applies throughout Region 6.

I. Very stable - No evidence of failure.

II. Stable - Occasional failures are observed.

III. Moderately stable - Several failures are observed.

IV. Unstable - Many failures are observed.

V. Very unstable - Entire area shows evidence of recent and past failures.

### Nature of Mass Movement

This is an estimation of the kind and/or size of mass movement observed.

### Expected Mass Movement as a result of Man's Activities

This rating indicates the expected mass movement resulting from man's activities as compared to stability under natural conditions. Ratings are based on soil and bedrock characteristics, slopes, revegetation potential, and effects of timber removal, road construction, fire and climate.

Unchanged - The expected mass movement is relatively unchanged from that of the natural state.

Increased - The expected mass movement is greater than that of the natural state.

Greatly Increased - The expected mass movement is much greater than that of the natural state.

## Soil Erosion Potential

This rating is based on expected losses of surface soil when all vegetation cover, including litter, is removed. Evaluation of climate, slope gradient and length, soil characteristics, hydrologic characteristics of the soil and bedrock materials of each landtype unit are considered in making ratings.

Very slight - Practically no loss of surface soil materials is expected.

Slight - Little loss of soil materials is expected. Some minor sheet and rill erosion may occur.

Moderate - Some loss of surface soil materials can be expected. Rill erosion and some small gullies or sheet erosion may be occurring. Sheet erosion can be determined by some soil pedestals and observable accumulation of soil materials along the upslope edge of rocks and debris. At this level of erosion there is a possible fertility loss.

Severe - Considerable loss of surface soil materials can be expected. Rill erosion, numerous small gullies or evidence that considerable loss from sheet erosion may occur. Sheet erosion is indicated by frequent occurrence of soil pedestals and considerable accumulation of soil materials along the upslope edge of rocks and debris. This is accompanied by a probable fertility loss.

Very Severe - Large loss of surface soil material can be expected in the form of many large gullies and/or numerous small gullies or large loss from sheet erosion. Sheet erosion loss is exhibited by numerous examples of soil pedestals and extensive accumulation of soil materials along the upslope edge of rocks and debris. This is accompanied by a fertility loss.

## Soil Hydrologic Group

This interpretation is a grouping of soils into four classes, indicating the general infiltration and water movement ability of the soil and bedrock materials. This method of rating has been developed by the Soil Conservation Service. The four groups are the standard SCS groupings and definitions.

Group A - Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sands and/or gravel. These soils have a high rate of water transmission and would result in a low runoff potential.



Group B - Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils, with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

Group C - Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (1) soils with a layer that impedes the downward movement of water, or (2) soils with moderately fine to fine texture and a slow infiltration rate. These soils have a slow rate of water transmission.

Group D - Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of (1) clay soils with high swelling potential, (2) soils with a high permanent water table, (3) soils with claypan or clay layer at or near the surface, and (4) shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission.

## Sedimentation Yield Potential*

This interpretation indicates the potential for water sedimentation and pollution from silt and clay particles carried in suspension following timber harvest, road construction or other activities. Factors considered in making ratings are soil texture and structure, drainage patterns, landform and climate.

Low - Sedimentation levels are not expected to be significant following management activities. Soils are generally moderately coarse textured. Maximum expected potential sediment yield is less than 5 tons/acre/year.

Moderate Sedimentation levels may be significantly increased following management activities with moderate loss of water quality and damage to fisheries. Soils are generally medium-textured. Expected potential sediment yield is 5-15 tons/acre/year.

High - Sedimentation levels are expected to be high following management activities. Streams become turbid and there is considerable loss of water quality and damage to fisheries. Soils are generally fine to moderately fine textured, but are frequently coarser when derived from granitic materials. Maximum expected potential sediment yield is more than 15 tons/acre/year.

Expected Sediment Size

This interpretation indicates the expected sediment size reaching the streams resulting from erosion of each unit. This interpretation is a statement of the two dominant separates expected (gravel, sand, silt or clay) from each soil unit. The ratings are presented in two columns. The first column indicates the separates expected from the surface soils, and the second indicates the separates expected from the subsoils.

* Potential sediment yield values are a reflection of surface, on-site erosion hazards calculated using the Universal Soil Loss Equation (USLE)/ These values do not reflect amounts of sediment derived from mass wasting processes and events. It is assumed that all or part of the materials lost to on-site soil erosion have at least the potential of becoming stream sediment. The values in this interpretation represent a condition likely to occur following an event which removes all vegetation and surface organic layers of the soil. These values may be expected to decline rapidly as vegetation becomes re-established.



## RECREATION

Interpretations for recreation pertain primarily to recreation development. They are based on soil and bedrock properties, drainage, landform and vegetation. Factors such as aesthetics and accessibility are not considered when making these ratings. The following interpretations are some most generally needed for planning recreation development

Landtype Suitability for Recreation Area Development

This rating is based on soil and bedrock characteristics and topographic features of each unit as related to recreation development such as campground and picnic sites. Factors important to this interpretation are soil depth, texture, structure, permeability, drainage, topography and susceptibility to flooding.

Unsuited - This rating indicates that soils and/or topography are of a nature which would prohibit recreation development without extensive modification.

Poor - These landtype units have major limitations to recreation development but limited development is feasible.

Moderate - This rating indicates that the landtype unit is generally suitable for recreation development but has minor limitations.

Well - These landtypes are particularly well suited for recreation development. Generally, they have no limitations.

Treatment to Increase Suitability

This indicates, when applicable, the treatment necessary to increase the suitability for recreation development.

Soil and Site Damage Susceptibility

This interpretation applies to recreational areas after development. Each landtype that is suitable or can be made suitable for campground development is rated for its susceptibility to damage of soil and/or site by normal recreation use. Site includes vegetation as well as soil conditions. Factors used in determining ratings include erosion potential, soil compactibility, and vegetative growth potential.

Low - These soils resist compaction and have low erosion potential. The native vegetation is hardy and not readily destroyed. These soils will withstand and hold up well under continual use.

Soil and Site Damage Susceptibility (continued)

Moderate - These soils are not readily compacted or eroded and vegetative types are somewhat hardy. In general, these soils and site can sustain continual use but require some rehabilitation.

High - These soils are fragile and easily damaged and have vegetation that is not hardy, easily damaged and generally herbaceous. Under normal use, the vegetation will very likely be destroyed, the soil compacted and/or eroded to such a degree that periodic nonuse and major rehabilitation will be required.

Susceptibility to Dustiness

This interpretation pertains only to the landtypes suitable for recreation development, and applies primarily to unsurfaced roads within recreation areas.

Low - Factors indicate dust will not be a problem.

Moderate - Under normal conditions dust will not be a problem but under heavy use and droughty conditions, dust very likely will be a problem.

High - Factors indicate dust will be a problem. Dust abatement measures are necessary under normal conditions and use.

Susceptibility to Muddiness

This interpretation pertains only to the landtypes suitable, or those that can be made suitable, for recreation development. This interpretation rates each soil as to its susceptibility to becoming muddy. The rating is limited to the surface soil under normal conditions. Factors include soil characteristics, climate and drainage.

Low - Muddiness is not likely to be a problem. Factors indicate soils are not susceptible to muddiness.

Moderate - Soils become muddy at times for short periods, occasionally causing problems. Road rock is usually necessary.

High - Soils are very likely to become muddy and stay muddy for long periods. Road rock is necessary. Campground closure may be necessary during wet periods.



Trail Suitability

This interpretation indicates the suitability of each landtype for trails. Factors include soil and bedrock characteristics, drainage, climate and slope.

Poor - These landtypes have properties which severely limit their use for trails. Extensive treatment measures are required.

Moderate - These landtypes have some limitations for trail development. Certain treatment measures may be required.

Well - These landtypes have no limitations for trail development.

Considerations for Trail Improvements and Protection

This indicates some treatment measures to be considered in improving suitability and protecting trails.

Suitability for Sewage Filter Field

This interpretation evaluates the soil as to its suitability as a sewage filter field. Ratings are based on soil depth, texture, permeability, drainage and slope. Only those soils suitable for recreation development are rated. On-site investigation is recommended before design or installation of filter system.

Poor - These soils have properties which make them poorly suited as sewage filter fields. Sewage filter disposal in these soils would be ineffective and create major problems.

Moderare - These soils have properties which limit their use as sewage filter fields. They require a large filter area for adequate drainage which limits the capacity of the campground.

Well - These soils are well suited to sewage filter use and offer only minor limitations, if any.

Suitability for Vault Toilets

Unless otherwise noted in the table, this rating is based upon two factors: slope and depth. A rating of "suited" indicates only that minimum criteria have been met.

Suited for Vault Toilets - These soils have less than 15% slope and are greater than 48 inches (120 cm) in depth to material requiring ripping or blasting.

## ENGINEERING

Interpretations for engineering include characteristics for roads, foundations, bedrock and some miscellaneous interpretations. They are presented on one table in this report. Generally, the ratings are on the entire Landtype Unit. Some interpretations are based only on the soil material or bedrock material. These are stated in the description for each interpretation. The interpretations pertaining to roads are based on standard Forest Service regulations and construction methods presently used.

### Unified and AASHO Classification

Each soil is classified as to its Unified and AASHO Classification. Most soils will be classified into one class. Those soils with significant layers of different soil materials will have a classification for each layer designated. The classification will be made for some representative soils by laboratory testing. Those soils not tested will be classified by comparing their properties to those tested.

### Suitability for Use as Topsoil Source

This rating evaluates each soil as to its suitability for use as topsoil. It does not specify any particular use of the topsoil. Ratings are based on soil characteristics.

Suited - Soil texture ranges from sandy loam to clay loam; gravel content is less than 30 percent and soil layer is at least 3 feet thick.

Unsuited - This rating indicates the soils do not satisfy the requirements specified under "Suited". However, soils rated "Unsuited" may still satisfy a particular requirement. See the "Table of Soil Characteristics" for soil texture, thickness and gravel content.

### Suitability of Soil as Sand and/or Gravel Source

This interpretation indicates the suitability of each soil as a possible source of sand and/or gravel. It does not indicate the kind or quality of sand or gravel, or refer to any specific use of the sand and/or gravel.

Suited - This rating indicates that sand and/or gravel is present and the following conditions are satisfied: There is a layer present which is composed of 80 percent, by volume, or sand and/or gravel. This layer is at least 4 feet thick and has no more than a 5-foot overburden.



Unsuited - This rating indicates that sand and/or gravel is generally not present in amounts which satisfy the requirements under "Suited". However, soils rated "Unsuited" may still satisfy a particular requirements. See the Table of Soil Characteristics for soil depth and gravel content.

### Suitability of Soil as a Possible Clay Source

This rating indictes the suitability of each soil as a possible source of clay. It does not indicate the kind of quality of clay or refer to any specific use of the clay.

Suited - This rating indicates that the soil is a possible source of clay. Soils with this rating have the following: Texture ranges from clay loam to clay. Gravel content is less than 30 percent. This layer is at least 2 feet thick.

Unsuited - Soils with this rating generally are not possible sources for clay.

### Considerations for Road Location and Construction

This column indicates the major considerations for road location and construction through each landtype. The rating evaluates the impact of road construction on other resources and/or road construction problems likely to be encountered.

### Method of Excavation

This interpretation refers to excavation methods most commonly used and required for each landtype. This includes soil, bedrock and cemented and/or compacted layers in the soil. Methods are blading, ripping and/or blasting. (Cautionary note: These appraisals are subject to change as machinery capabilities change.)

### Cutbank and Ditch Erosion Potential

This interpretation indicates the potential for subsoil erosion by running water of each soil. It includes erosion which takes place along road ditches and on cutslopes. Rating is of soil material only and does not apply when cutbank or ditch is in bedrock. Factors considered in making ratings are field observations, texture and structure of subsoil materials, permeability, compaction and climate.

Low - Factors indicate that little or no subsoil erosion is likely to occur.

Moderate - Factors indicate that the subsoils have moderate erosion potential.

High - Factors indicate that the subsoils are likely to erode severely.

## Susceptibility to Cutbank Sloughing and Raveling

This rating evaluates each unit for its susceptibility to sloughing or raveling after excavation. Ratings are based on cutbanks at least 10 feet high. Factors include field observations, soil and bedrock characteristics, backslope ratio, frost action, climate and potential for revegetation.

Low - Sloughing and/or raveling is a minor problem requiring occasional road maintenance.

Moderate - Sloughing and/or raveling causes some damage. Annual road maintenance is usually adequate.

High - Sloughing and raveling occur at a rate that often plugs culverts and fills inside ditches. Frequent road maintenance with heavy equipment such as front-end loader is required.

## Estimated Cutslope Ratio

This interpretation estimates the cutslope ratio which generally will result in the most stable cutbank condition. Ratings made are for cutbanks at least 10 feet high and pertain both to soil and bedrock material. Ratings are based on soil and bedrock factors and on observations. (Cautionary note: This information is for broad planning purposes only. Specific on-site characterization data is needed to determine the proper ratio.)

Steep - Cutbank ratio from vertical to ¼:1.

Moderate - Cutbank ratio from about 1:1 to 1½:1.

Flat - Cutbank ratio flatter than 1½:1.

## Probability of Cutbank Failures

This interpretation indicates the probability of failures in cutbanks following road or building excavation. The highest rate of failing will probably occur within the first two years after excavation. On landtypes rated as having cutbank stability I and II, there should be few failures after the initial two-year period. Landtype units rated as having cutbank stability III, IV or V, will experience failures after the initial two-year period. In the case of landtypes rated with cutbank stability V, failures can be expected to occur indefinitely.

Failures are considered to be at least 10 cubic yards of material in volume. It should be realized that, as the probability of cutbank failures increases, so does the probability that a few of these failures will have volumes in excess of 50 cubic yards and, in some instances, there will be massive failure where entire sections of the road are lost.



Ratings are based on cutbanks of at least 10 feet in height, and refer to more than a 50-percent chance of failure.

I Very stable - practically no probability of chance of cutbank failure.

II Stable - probability of no more than three failures per mile of road cutbank.

III Moderately stable - probability of four to eight failures per mile of road cutbank.

IV Unstable - probability of nine to fifteen failures per mile of road cutbank.

V Very unstable - probability of more than fifteen failures per mile of road cutbank.

## Failure Potential on Road Waste and Fills

This interpretation rates the landtype units as to the susceptibility of failure occurring on fill and sidecast waste material and related damage to resources. Failures are defined as a loss or partial loss of road fill or sidecast material on the fill slope. Considered are initial and subsequent failures caused by construction, erosion and additional sidecast during maintenance. Failures reullt in damage to various resources. Stream sedimentation levels are increased, resulting in an adverse effect on both water quality and fisheries. Timber growth potential is affected as fill slpe areas no longer contribute to production. Occasionally the failures do damage to the road itself. The ratings are based on current road construction practices and procedures and on type of soil materials, natural drainage of the site, landform, slope of the fill and field observation.

Low - Failure on road waste and fills is sufficiently low to result in only minor damage to resource values.

Moderate - Failures on road waste and fills occur with sufficient frequency to cause moderate damage to resource values.

High - Failures on road waste and fills occur at a rate and magnitude sufficient to cause major damage to resource values.

## Erosion Potential on Road Waste and Fills

This interpretation rates the landtype units as to the susceptibility of erosion occurring on fill and sidecast waste material and related damage to resources. Erosion is a loss of surface soil from fill or sidecast.

This erosion contributes sedimentation to streams. Timber growth potential is affected as fill slope areas no longer contribute to production. The ratings are based on current road construction practices and procedures and on type of soil materials, natural drainage of the site, landform, slope of the fill and field observation.

Low - Erosion on road waste and fills is sufficiently low to result in only minor damage to resource values.

Moderate - Erosion on road waste and fills occurs with sufficient magnitude to cause moderate damage to resource values.

High - Erosion on road waste and fills occurs at a magnitude sufficient to cause major damage to resource values.

Suitability of Road Waste & Fill Slopes to Seeding

This interpretation indicates the probably success of fill slope seeding. Factors considered in making ratings are soil characteristics, elevation, slope, climate, snowpack and frost hazard. Ratings are based on current methods and practices of seeding, grass species, fertilizer application and time of seeding.

Poor - Probability of success is low. Seeding generally is not successful and requires three or more reseedings and special treatments.

Fair - Success is likely on about 50 percent of area treated. Requires one or two followup treatments. Seeding usually becomes well established within two years. Little followup seeding necessary.

Good - Probability of high success. Seeding usually becomes well established within two years. Little followup seeding is necessary.

Suitability of Cutbanks to Seeding

This interpretation indicates the probably succes of cutbank seeding. Factors considered in making ratings are soil characteristics, elevation, slope, climate, snowpack and frost hazard. Ratings are based on current methods and practices of seeding, grass species, fertilizer application and time of seeding.

Poor - Probability of success is low. Seeding generally is not successful and requires three or more reseedings and special treatments.



Moderate - Success is likely on about 50 percent of area treated. Requires one or two followup treatments. Seeding is usually spotty; some areas become easily established, while others fail completely.

Well - Probability of high success. Seeding usually becomes well established within two years. Little followup seeding necessary.

## TIMBER MANAGEMENT

Interpretations for Timber Management are based upon field observations and evaluations of present and past practices. The interpretations are of two types. One type includes interpretations that directly affect timber management such as "Potential for Regeneration". The other type indicates the effect on soils and other resources from timber harvest activities.

### Potential for Regeneration

This interpretation indicates the potential for each Landtype Unit to regenerate at a minimum level of stocking as set by the Forest Service. Factors included in this interpretation are soil characteristics, climate, aspect, elevation, frost potential, brush competition and tree species. This interpretation applies to planted stock and natural regeneration.

Low — This rating indicates the potential for regeneration is low. Probability of success is very limited. Major regeneration problems can be expected and reseeding or replanting may be required throughout the area. Several years may elapse before an adequate stocking level is achieved.

Moderate - This rating indicates that some problems will be encountered in attaining a satisfactory stocking level. Usually regeneration is spotty and some replanting will be necessary.

High - This rating indicates that regeneration has a high probability of success. Few problems should be encountered in attaining good stocking levels.

### Suggested Tree Planting Species

This column lists the tree species that the soil, climate and topographic factors indicate may be best suited for planting.

### Dominant Tree Species

This column indicates the timber species which appears to be most adapted to the environmental setting and other site related qualities which aracterize a particular landtype.



### Dominant Timber Species Site Class*

This column is designed to give a basis of comparison in the evaluation of relative site quality. These ratings are specific to the species identified. For example, a Site Class III rating for Shasta red fir is definitely not intended to imply that the same area is rated Site Class III for Douglas-fir, white fir or ponderosa pine.

### Soil and Water Impacts from Various Timber Harvest Methods

This interpretation indicates the susceptibility of soil and water resources to incur damage from various timber harvest methods. Each landtype is evaluated as to the expected impact from each of the following harvest methods: Tractor logging, cable (no suspension) and cable (full suspension). The evaluation of expected impact includes soil and water resource damages from timber removal, spur roads, landings and other activities that may be associated with the harvest method being evaluated. The evaluations are based on a full operating season. Damage is caused to soils by creating soil disturbance which may destroy soil structure, cause compaction and increase erosion. This may affect other resources through loss of production, lower water quality and yield, and loss of fisheries. Field observations indicate the most important factors to consider in making these ratings are wetness of soil, soil texture and structure, percentage of coarse fragments, slope characteristics, drainage, climate and field observations.

Low - This rating indicates that the impacts to the soil and water resources are minor. Little or no site damage is expected.

Moderate - This rating indicates that the impacts to the site are moderate. Soil and water resources are expected to incur moderate damage.

High - This rating indicates that the impacts to the site are major. Excessive damage to soil and water resources is likely to occur both on and beyond the area undergoing harvest.

### Type of Damage Expected During and Subsequent to Timber Harvest Operations

This indicates the type of soil and water resource damage expected on each soil from various harvest methods.

* Douglas-fir site class ratings are based upon information in the USDA Technical Bulletin No. 201 by R. E. McArdle, W. H. Meyer and D. Bruce. All other species are rated in accordance with cubic foot site class categories found in the "Field Instructions for Integrated Forest Survey and Timber Management Inventories in Oregon, Washington and California", USDA Forest Service, R-6.

## LANDTYPE CHARACTERISTICS

This tableis designed to define and differentiate each Landtype Unit by its range of physical characteristics. Based upon the premise that: a Landtype = Physiographic Characteristics + Soil Characteristics + Vegetative and Climatological Characteristics, this table defines the various significant components of each of these three major areas of influence as they pertain to each Landtype Unit.

Physiographic Characteristics These are the factors which define the genesis, evolution, form and qualities of land surface.

Physiographic Province/Sub-Province - This relates a Landtype Unit to a region having a similar structure climate and geomorphic history such as the High Cascades, Western Cascades or the Klamath Mountains. A Sub-Province is a logical refinement which may occur within a Physiographic Province.

Landform and Position Description - This characterizes the form and position of each Landtype. Also, the processes which may have been responsible for its origin are implied where appropriate. (See Section on Slope Nomenclature.)

Rock Outcrop Percent - This column identifies the amount of rock outcrop which may be expected for each Landtype Unit.

Slope Range - This gives the normal slope range for each Landtype Unit.

Soil Characteristics - Ranges in soil physical characteristics are listed here.

Soil Profile Type - A soil is not a Landtype. Therefore, it is possible that one soil may appear in two or more Landtype Units. This column is a reference to the soil profile type occurring on a Landtype. A more complete description of the representative profile may be found in the soil section of this report.

Soil Textural Range - This column gives a range in soil textures which may be found on a Landtype. Included in this range is the following coarse rock fragment content notation:

0 - 35 percent - not noted
35 - 50 percent - gravelly, cobbly or stony
50 - 80 percent - very gravelly, very cobbly or very stony
80 percent + - extremely gravelly, extremely cobbly or extremely stony.

(See Appendix which covers abbreviations)



Thickness of Surface Layers - This identifies the range in thickness of mineral soil layers formed at or near the surface in units of inches and centimeters.

Depth to Sub-Stratum - The depth range of a soil to a layer of unmodified parent material or rocks in inches and centimeters.

Nature of SubStratum - This column identifies the type of material comprising the sub-stratum. The sub-stratum may be comprised of such materials as hard rock, weathered rock colluvium, glacial till, alluvium, etc.

Drainage Class - The rapidity and extent of removal of water from the soil. Based on soil permeability, infiltration, internal drainage and topographic position.

Poorly Drained - Water table at or near the surface a considerable part of the time. Soils of this class usually occupy level or depressed sites and are frequently ponded. Water is removed so slowly that soil remains wet almost all of the time.

Somewhat Poorly Drained - Water removed so slowly that the soil remains wet for significant periods, but not all the time.

Moderately Well Drained - Soil remains wet for a period somewhat longer (up to one month) than the wet season; may be due in part to a slowly permeable layer, high water table or lateral seepage.

Well Drained - Water is removed from soils readily and these soils are saturated only during the wet season for short periods.

Excessively Drained - Water is removed from soil rapidly and these soils are rarely ever saturated. Commonly, these soils are coarse-textured or shallow, stony and/or occur on steep slopes.

Intrinsic Productive Potential - A characterization based upon a variety of site and soil factors which influence productivity. These may include such things as soil fertility, soil drainage, aspect, elevation, climate and slope position.

Rooting Depth - The depth, in inches and centimeters, which is or can be occupied by vigorous root systems; i.e., Zone of maximum accumulation.

Origin of Soil Material - This identifies the parent material in which the soil is being formed.

Vegetative and Climatological Characteristics - This characterizes the surrounding or encompassing factors which affect such things as productivity and manageability. These factors are usually reflected in the vegetation.

Environmental Zone - This column indicates the environmental zone or zones in which a Landtype Unit may occur. (See Environmental Zone descriptions in text.) These Environmental Zones are defined in terms of vegetative groups, precipitation, elevation, soil temperature regime and soil moisture regime.

## BEDROCK CHARACTERISTICS

These terms are found in the Table of Bedrock Characteristics of Landtype Units.

Bedrock - Consolidated rock which upon weathering produces loose or unconsolidated soil material. Bedrock material usually requires ripping and/or blasting. However, blading may be adequate where rock is soft or highly weathered.

Composition - A general description of bedrock material.

Color - Color is in narrative terms for fresh, unweathered surfaces.

Hardness - Relative rating based on ease of breaking rock with geology hammer:

Hard - Rock cannot be broken or only with great difficulty.

Moderately Hard - Rock can readily be broken with hammer but not by hand.

Soft - Rock can be broken by hand.

Degree of Fracturing - Based on the number or frequency of fractures and joints in a rock unit:

Highly Fractured - Entire rock unit is completely dissected by fractures and joints less than one foot apart.

Moderately Fractured - Fractures divide rock unit into units or blocks generally for one to five feet apart.

Slightly Fractured - Only occasional fractures noted.

Massive - No fractures or very few fractures noted.

Competency - The relative inherent strength of rock as it occurs on the landscape, based upon degree of weathering, fracturing, hardness, stability and failure observed.

Competent - No failures within rock unit observed. Rocks of this unit are stable and have strong relative resistance to mass wasting.

Moderately Competent - Some failures are noted. Rocks of this unit are moderately stable but may contain weak zones which are prone to mass wasting failures.

Incompetent - Failures are common to this rock unit. Rocks are generally soft, deeply weathered and have a high potential for mass wasting failure.



## SOIL CHARACTERISTICS

Soil - Any and all loose, unconsolidated, weathered material on the earth's surface resting on solid, consolidated, unweathered bedrock regardless of origin, mode of formation, or type of weathering or deposition. Generally includes any material that may be manipulated by hand tools or heavy equipment without the need of blasting except soft, unweathered bedrock. In soil horizon designation, soil materials included "A", "B" and "C" horizons.

Location of Modal Site - The legal description of the modal soil site location.

Soil Layer - Each soil layer is a homogeneous layer of soil material. Soil layers are described when soil characteristics change significantly and have definite effects on management. Each layer may result from stratification or soil formation processes.

Soil Layer Thickness - Thickness of each soil layer in inches and centimeters.

Color - Stated in narrative Munsell notations for each soil layer. Colors are taken of moist crushed soil. Mottling is noted, if present, especially in subsoil layers.

Texture - Relative proportions of sand (2.0mm - .05mm), silt (.05mm - .002mm) and clay (less than .002mm) Standard USDA textural classes are used for each soil layer.

Textural Classes - These classes apply when general textural terms are used for the profile sketch in the mapping unit descriptions.

Coarse-Textured Soils - Sands, loamy sands.

Moderately Coarse-Textured Soils - Sandy loams, fine sandy loams.

Medium-Textured Soils - Very fine sandy loam, loam, silt loam, silt.

Moderately Fine-Textured Soils - Clay loam, sandy clay loam, silty clay loam.

Fine-Textured Soils - Sandy clay, silty clay, clay.

Rock Fragment Quantity, Size and Shape - Percent by volume occupied by consolidated fragments larger than sand size (larger 2mm)

Rock Fragment Classes - Used as an adjective to textural classes. Includes gravel, cobble and stone sizes.

0 - 35 percent - not noted
35 - 50 percent - gravelly, cobbly or stony
50 - 80 percent - very gravelly, very cobbly or very stony
80 percent + - extremely gravelly, extremely cobbly or extremely stony.

Size Classes - Gravel, 2mm - 3 inches; cobbles, 3 inches to 10 inches; stones, greater than 10 inches.

Shape Classes - round, thin, flat, subangular, subround, angular, blocky, etc.

Soil Structure - Includes grade, size and type of structure for each soil layer. If no structure exists, then the soil is massive or single-grained. Concretions or shot are recorded, if present. Applies to aggregate structural units (aggregates and peds).

Grade - Degree of aggregation and expression of the differential between cohesion within aggregates and adhesion between aggregates.

Weak - Indistinct peds, barely observable in place.

Moderate - Distinct peds, moderately durable and evident.

Strong - Distinct peds in place, durable.

Size - Refers to size of aggregates according to five size classes and type of structure.

Type - Refers to relative shape of individual aggregates. There are four primary basic shapes.

Platy - Soils particles arranged around a plane, generally horizontal.

Prism-like - Soil particles arranged around a vertical line and bounded by relatively flat surface (Prismatic, Columnar).

Block-like - Soil particles arranged around a point and bounded by flat or rounded surfaces (Angular Blocky, Subangular Blocky).

Spheroidal - Soil particles arranged around a point and bounded by curved or very irregular surface (granular, crumb).

Structureless - No observable aggregation or no definite orderly arrangement of natural lines of weakness.

Massive - The soil material is coherent.

Single Grain - The soil material is incoherent.



Cementation - Includes degree of cementation and the agent of cementation (Ca, Fe, Al, Si). Cementation is generally caused by a chemical process.

Degree of Cementation

Weak - Soil aggregates can be easily broken by hand, and usually nonrestrictive to water and roots. Example: fragipan.

Strong - Soil aggregates are difficult to break by hand or hand tools and resist movement and penetration of water and roots. Water may be perched or ponded for short periods. Aggregates can be penetrated by hand tools.

Indurated - Soil aggregates are insoluable in water and cannot be broken by hand tools. Aggregates are totally restrictive to water and roots and usually require ripping or blasting.

Compaction - Relative increase in bulk density which is caused by natural pedogenic processes.

Degree of Compaction

Weak - Soil aggregates are easily broken by hand and are usually nonrestrictive to water and roots.

Moderate - Soil aggregates are difficult to break by hand and resist movement and penetration of water and roots. Water may be perched or ponded for short periods of time.

Strong - Soil aggregates cannot be broken by hand. The soil exhibits nearly total restriction to water and root penetration and usually requires ripping or blasting.

Permeability - Water or air movement in and through the soil material. The classes are based on soil texture, rock fragment content, porosity and bulk density.

Class:

Very Slow - Generally fine-textured soils - clay. Less than .05 inches/hr.

Slow - Generally moderately fine-textured soils - clay loams and silty clay loams. .05 inch/hr. to 1 inch/hr.

Moderate - Generally medium-textured soils - loams, silt loams. 1 inch/hr. to 5 inches/hr.

Rapid - Generally moderately coarse-textured soils, sandy loams, gravelly loams. 5 inches/hr. to 20 inches/hr.

Very Rapid - Very porous soils. Generally coarse-textured soils - sands and gravels. Greater than 10 inches/hr.

Consistence - Degree of cohesion and adhesion as indicated by the resistance of the soil aggregate to deformation or rupture under various moisture conditions.

Dry

Loose - noncoherent.

Soft - easily crushes to powder or single grain.

Slightly hard - easily broken between thumb and forefinger.

Hard - can be broken in the hands without difficulty but difficult to break between thumb and forefinger.

Very hard - can be broken in hands without difficulty.

Extremely hard- cannot be broken in hands.

Moist

Loose - noncoherent

Very friable - crushes under gentle pressure.

Friable - crushes easily under gentle to moderate pressure between thumb and forefinger.

Firm - crushes under moderate pressure beteween thumb and forefinger.

Very Firm - crushes under strong pressure, barely crushable between thumb and forefinger.

Extremely firm - crushes under very strong pressure, cannot be crushed between thumb and forefinger.

Wet

Stickiness is measured by pressing wet soil between fingers.

Non-sticky - practically no adherence when pressure is released.

Slightly sticky - after pressure, soil adheres to both thumb and finger but comes off one rather cleanly. Does not stretch appreciably.

Sticky - after pressure, soil adheres to both thumb and finger and tends to stretch somewhat before pulling apart from either digit.



Very Sticky - after pressure, soil adheres strongly to both digits and is markedly stretched when they are separated.

Plasticity is measured by rolling wet soil and observing wire.

Nonplastic - no wire is formable.

Slightly plastic - wire forms, but soil mass easily deformed.

Plastic - wire forms, moderate pressure required to deform soil mass.

Very plastic - wire forms, much pressure required to deform soil mass.

Soil pH - intensity of soil acidity or alkalinity expressed on a scale from 1 to 14:

| | pH | | pH |
|---|---|---|---|
| Extremely acid | - below 4.5 | Neutral | 6.5 - 7.3 |
| Strongly acid | - 4.6 - 5.5 | Slightly alkaline | 7.4 - 8.4 |
| Slightly acid | - 5.6 - 6.4 | Strongly alkaline | 8.5 - 9.0 |
| | | Very strongly alkaline | above 9.0 |

Classification - estimated taxonomic classification at family level.

CASCADE MOUNTAINS

## CASCADE PHYSIOGRAPHY

A major portion of the Rogue River National Forest is situated in the southern portion of the Cascade Mountain Range. This mountain range is separated into two physiographic provinces based upon degree and type of landform development as well as overall age. The two provinces are:

### THE WESTERN CASCADES

The Western Cascades Physiographic Province is located between the Interior Valley Provinces or the Klamath Mountains Province to the west and the High Cascades Province to the east. The geologic materials of the Western Cascades are older than those found in the High Cascades and consist of Tertiary andesites, basalts, flow breccias and pyroclastics. These materials are frequently highly weathered.

Stream erosion or fluviation is well defined in this province by the steep, dissected topography. This degree of dissection is somewhat modified at the higher elevations by the presence of more erosion-resistant basalt and andesite cap rocks. Elkhorn, Sugar Pine, Bitter Lick and the South Fork of Little Butte Creek are typical of the more maturely dissected terrain while the slopes of Butler Butte and the area between Little Bear Camp and Huckleberry Lake are representative of the more subdued topography of the Province.

Evidence of alpine glaciation can be seen along the upper portions of Flat Creek, Foster Creek and several smaller streams in the same area. Buck Canyon, which contains the West Fork of Muir Creek, is a well defined glacial trough. Where glaciation has occurred, most evidence of past fluvial development is obliterated.

In addition to fluvial and glacial processes, large scale mass wasting is responsible for many of the landforms in the Western Cascades. These old landflows, comprised of plastic soil and bedrock materials, probably originated during a more humid climatic period or a period of accelerated tectonic activity such as that associated with the formation of the High Cascades. Today, these landflows exist as very deep deposits of clayey materials, portions of which tend to slump and flow upon saturation and agitation. These areas are potential sources of large quantities of colloidal sediment. This type of sediment produces an acute water discoloration effect and tends to remain in suspension for extremely long periods of time. Coalmine Creek and Dead Indian Creek cut through many excellent examples of this type of terrane. Landflows are widespread through the Western Cascades.

The complexity of the overall topography typifying the Western Cascades Physiographic Province is intermediate between the High Cascades and the Siskiyou Mountains.

## THE HIGH CASCADES

The High Cascades Physiographic Province is comprised of a long, north to south oriented plateau bounded on the west by the Western Cascades Physiographic Province and on the east by the Klamath Basin portion of the Basin and Range Physiographic Province. This plateau is frequently interrupted by volcanic peaks and cinder cones. The geologic materials within the High Cascades are generally the most recent to be found on the Forest. They consist dominantly of basalts, andesites and recent volcanic pyroclastics ranging in age from Late Tertiary to Quaternary. Generally, the older rocks are found at the lower elevations of the High Cascades. These rocks frequently display a high degree of weathering and are relatively soft where not scoured by recent glaciation.

Fluvial erosion has so far played a relatively minor role in the formation of surfaces within this province. Slopes are gentle and smooth with most stream channels limited to glacially-produced depressions. In a few non-glaciated portions such as Rustler Peak and the south slopes of Bessie Rock, stream-cut features are evident though not nearly so well developed as those found in the Western Cascades and the Siskiyou Mountains.

The effects of alpine glaciation dominate more than one-half of the forest land occupying the High Cascades. Union Creek, Sherwood Creek, the East Fork of Muir Creek, Red Blanket Creek and all three forks of the Rogue River begin in glacial troughs. Several of these troughs have had subsequent deposits of ash flow materials associated with the eruption of Mazama and others may have been obliterated by these deposits. Some of the steepest slopes in the Cascades are associated with the flow materials and the glacial trough walls. Ice gouged paternoster and cirque lakes as well as wet meadows are common along the crest of the Cascades where many of the valley glaciers originated.

In addition to the features resulting directly from glacial scouring, large portions of the High Cascades are dominated by glacial or glacio-fluvial deposits. Glacio-fluvial deposition is responsible for the sand flats near Whisky Springs and also those between Prospect and the town of Union Creek. Many smaller, but similar, deposits can also be found along glacial trough bottoms. Direct glacial deposition of stoney material is also common. These deposits are termed moraines and are extensive on the Butte Falls and Prospect Ranger Districts. Sumpter Creek, Black Bear Swamp, Whitman Creek, Wallowa Creek, Bert Creek and Huckleberry Campground are all underlain by morainal deposits.

Some mass wasting has occurred in the High Cascades Province; however, large landflows such as those found in the Western Cascades are uncommon. Most mass wasting is in the form of debris avalanches along glacially oversteepened trough walls.



The eastern half of the Prospect Ranger District has been influenced most recently by deposits of pumice and ash originating with the eruption of the former Mount Mazama. Large volumes of these materials flowed rapidly down the flanks of the volcano as it erupted. These deposits filled and frequently overtopped the pre-existing valleys leaving broad, smooth, gently inclined surfaces occasionally interrupted by remnant residual landforms. In places, the deposits are several hundred feet thick. Subsequent action of running water has cut deeply incised, narrow canyons into the pumice down to the original surfaces which pre-date the deposits. Castle Creek, Bybee Creek, Crater Creek and National Creek dissect these deposits.

The High Cascades Physiographic Province is, topographically, the least complex of the three physiographic provinces comprising the Rogue River National Forest.

# PHYSIOGRAPHIC PROFILES OF SRI LANDTYPE UNITS

## HIGH CASCADES RESIDUAL LANDTYPES, LOCAL CINDER CONE & GLACIAL DEPOSITS

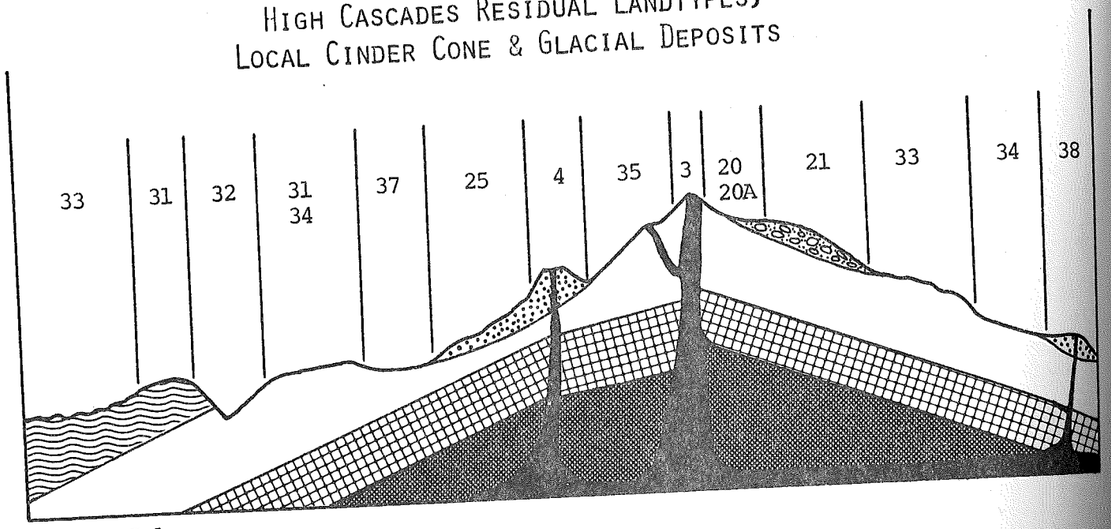



DIAGRAM C-1

## LANDTYPES ASSOCIATED WITH

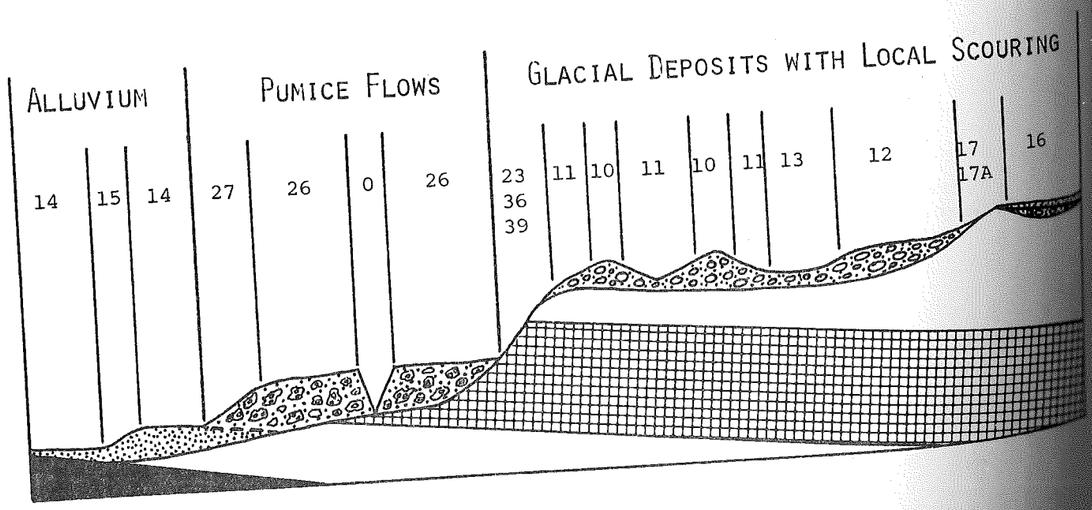



DIAGRAM C-2



# PHYSIOGRAPHIC PROFILES OF SRI LANDTYPE UNITS

## LANDTYPES ASSOCIATED WITH

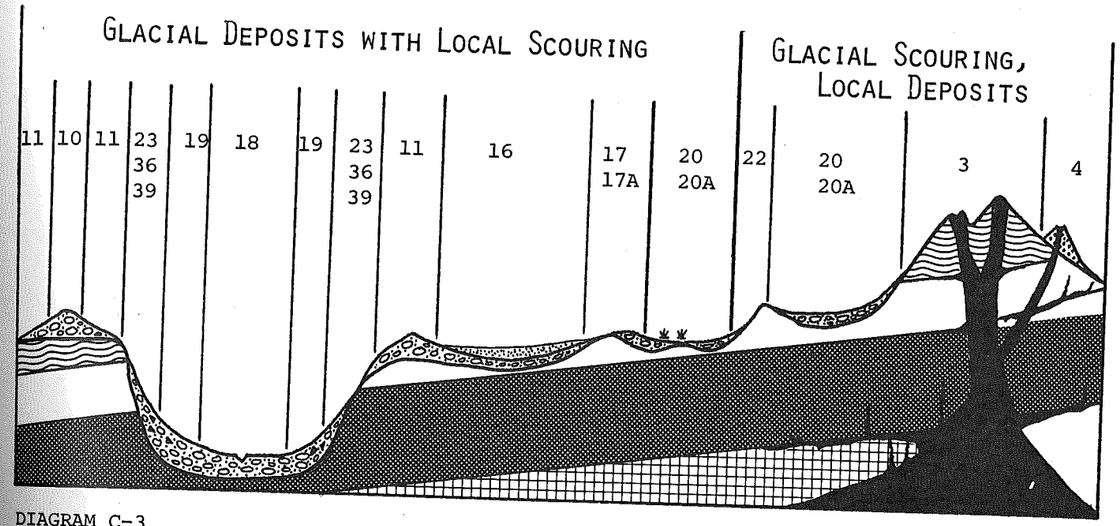



DIAGRAM C-3

## WESTERN CASCADES RESIDUAL LANDTYPES, LOCAL LANDSLIDE DEPOSITS

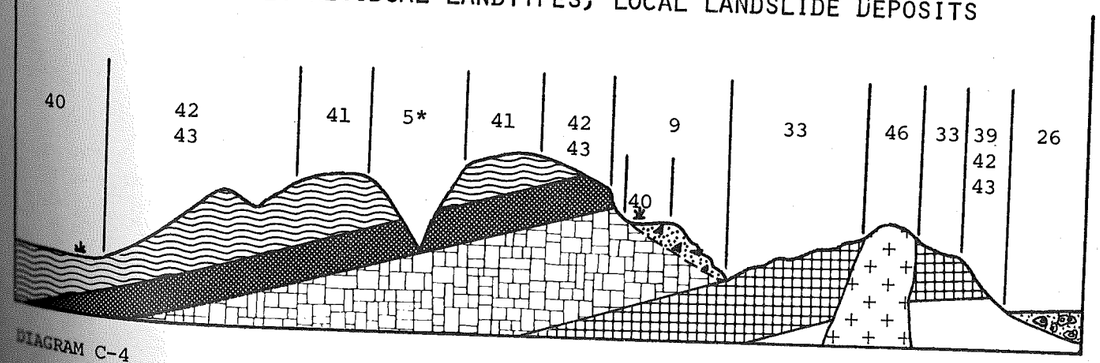



DIAGRAM C-4

* This Landtype contains more than three stream dissections per linear horizontal mile of slope as determined photogrammetrically.

Major Vegetation Group Sub-Division (continued)

PH-4 (Principal Forest Zone, High Cascades, Excessively Drained Soils)

| | |
|---|---|
| conifer Species | PSME, PIPO & ABCO |
| hardwoods & shrubs | ARNE, CEPR, HODI, BENE & QUKE |
| groundcover & low shrubs | SIHY, PTERI, ARMA & WHMO |

PW-2 (Principal Forest Zone, Western Cascades, somewhat poorly drained soil)

| | |
|---|---|
| conifer species | ABCO, TSHE, LIDE & TABR |
| hardwoods & shrubs | SALIX, ACGL & ACCI |
| groundcover & low shrubs | JUNCU, CAREX, LINNA, ACTR, VAHE, CHUM, ADBI & RUMA |

PW-3 (Principal Forest Zone, Western Cascades, well-drained soils)

| | |
|---|---|
| conifer species | PSME, ABCO & TSHE |
| hardwoods & shrubs | CACH, ACMA, ACCI, BENE & COCO |
| groundcover & low shrubs | FRAGA, GOOB, ACTR, CHUM, TROV, WHMO & LATHY |

PW-4 (Principal Forest Zone, Western Cascades, droughty conditions) 1/

| | |
|---|---|
| conifer species | PSME, PIPO & LIDE |
| hardwoods & shrubs | QUKE, QUGA, QUCH, ARME, HODI, RHDI, BEPI & CECU |
| groundcover & low shrubs | WHMO, LOHI & PTERI |

UPPER FOREST ZONE

| | |
|---|---|
| Dominant Conifer Species | ABMA & ABCO |
| Precipitation Amount | 55-70" (150-180 cm) |
| Precipitation Form | winter snow and rain, summer thunderstorms |
| Soil Moisture Regime (estimated) | UDIC(moist) |
| Soil Temperature Regime (estimated) | FRIGID(cool) |
| Elevation Range | 4500-6000' (1400-1800 m) |

Major Vegetation Group Sub-Division

U-1 (Upper Forest Zone, Western and High Cascades, well-drained soils)

| | |
|---|---|
| conifer species | ABMA, ABCO & TSME |
| hardwoods & shrubs | ACGL, BENE, CEVE, CACH, SYMPH, RIBES & VAME |
| groundcover & low shrubs | RUUR, CHUM, TROV, RUMA & ACTR |



SUB-ALPINE FOREST ZONE

| | |
|---|---|
| Dominant Conifer Species | TSME, ABMA, ABLA |
| Precipitation Amount | 55-70" (150-180 cm) |
| Precipitation Form | winter snow, summer thundershowers |
| Soil Moisture Regime (estimated) | UDIC(moist) |
| Soil Temperature Regime (estimated) | CRYIC(cold) |
| Elevation Range | 6000-7500+' (1800-2300 +m) |

Major Vegetation Group Sub-Division

A-1 (Sub-Alpine Forest Zone, Western and High Cascades, well-drained soils) 2/

| | |
|---|---|
| conifer species | TSME, ABMA, ABLA 3/, PIEN 3/ & PICO |
| hardwoods & shrubs | ARNE, ARPA & VAME |
| groundcover & low shrubs | VACA, CHUM, CAREX, RUUR & SMST |

1/ Areas at elevations below 3,000 feet (900 m) have mesic (warm)soil temperature regimes. These areas are of limited extent within the Cascade portion of the Rogue River National Forest and contain plant species associated with PW-4.

2/ The Sub-Alpine environmental zone is not extensive enough to be mapped within the Western Cascades at the SRI mapping scale. This zone is found primarily in the High Cascades portion of the Forest.

3/ These conifers are usually found on the more moist sites.

## ENVIRONMENTAL ZONE SYMBOLS FOR THE CASCADES

The symbolism used to identify the environmental zones in the Cascades portion of the Forest is designed to reflect:

(1) The environmental zone, (2) the physiographic province of relevance, and (3) soil drainage conditions affecting vegetative composition over relatively large mappable areas. 1/

The individual components are defined as follows: 2/

P - Principal Forest Zone
U - Upper Forest Zone
A - Sub-Alpine Forest Zone
H - High Cascade Physiographic Province
W - Western Cascade Physiographic Province
1 - Soil drainage not emphasized (assume well drained)
2 - Somewhat poorly drained soil conditions
3 - Well drained soil conditions
4 - Droughty or excessively drained soil conditions.

A symbol may be broken down as follows:

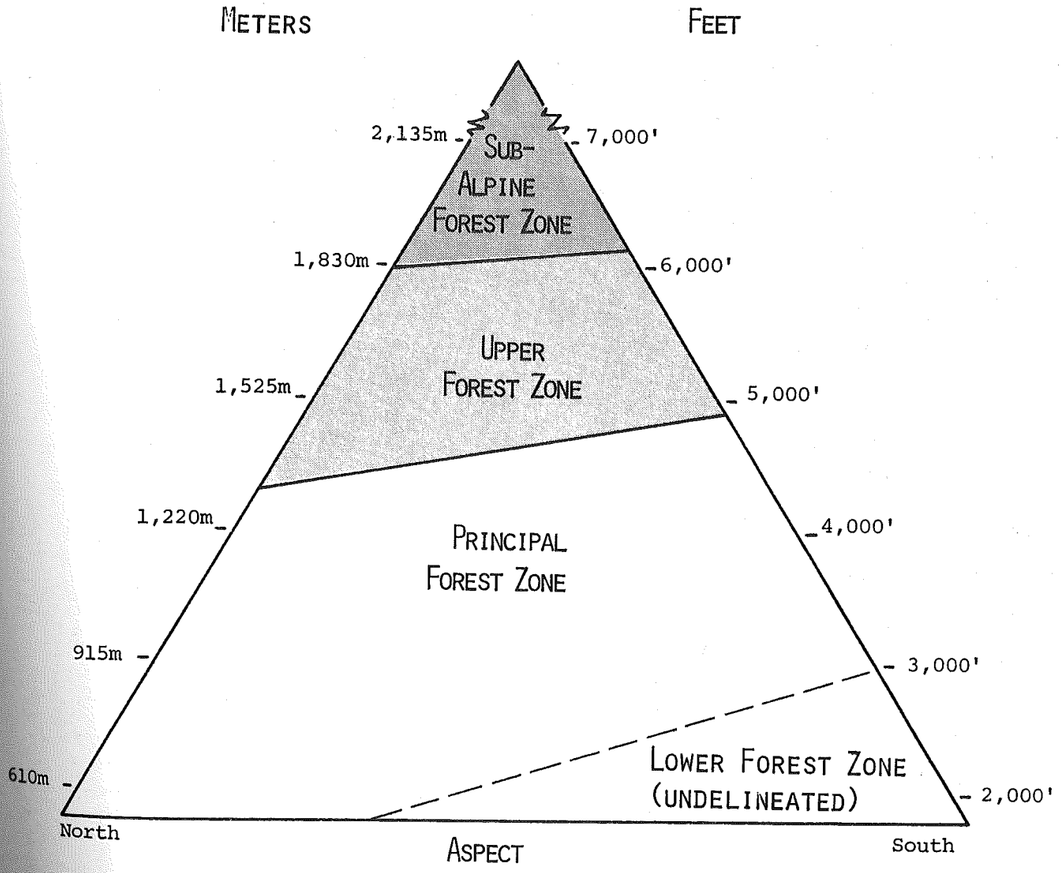
| | |
|---|---|
| | Principal Forest Environmental Zone |
| PH-3 | High Cascade Physiographic Province |
| | Well-Drained Soil Condition. |

or

| | |
|---|---|
| | Sub-Alpine Forest Zone |
| A-1 | Soil Drainage Not Emphasized (Physiographic province not relevant) |

1/ Soil drainage conditions, unless extreme, have a lesser affect upon Upper and Sub-Alpine Forest Zone vegetation composition. This is due to the fact that most vegetation, and particularly the overstory

CASCADE
ENVIRONMENTAL ZONES
ASPECT
&
ELEVATION



SOILS OF THE CASCADE MOUNTAINS

RANGE OF PROFILE CHARACTERISTICS

## SOIL 1000

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1-2 inches (3-5 cm) thick.

**Surface Layers:** Very dark brown to dark brown gravelly and very gravelly sandy loams; weak, fine, granular to single grain structure; non-sticky and non-plastic when wet; pH ranges from 5.0 to 6.0; 10 to 20 inches (25-50 cm) thick.

**Sub-soil Layers:** Dark yellowish brown very gravelly and very gravelly sandy loams; weakly compacted, massive structure; non-sticky and non-plastic when wet; pH ranges from 5.2 to 6.2; 10-20 inches (25-50 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till beginning at a depth of 20-30 inches (50-75 cm).

Soil 1000 is found on Landtypes 10 and 10-H.

## SOIL 1100

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1-2 inches (3-5 cm) thick.

**Surface Layers:** Very dark brown to dark grayish brown gravelly and very gravelly sandy loams (coarse fragment size ranging to cobble); weak to moderte fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.0 to 6.0, 20-40 inches (25-100 cm) thick.

**Subsoil Layers:** Dark yellowish brown cobbly and very cobbly sandy loams; weakly compacted massive structure; non-sticky and non-plastic when wet; pH ranges from 5.0 to 6.0; 30-40 inches (75-100 cm) thick.

**Nature of Sub-Stratum.** Strongly compacted glacial till beginning at a depth of 50-80 inches (125-205 cm).

Soil 1100 is found on Landtypes 11, 11-H and 23.

## Soil 1200

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1/2-2 inches (1-5 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown loams, gravelly loams, sandy loams and gravelly sandy loams; weak to moderate, medium, granular structure; non-sticky and non-plastic when wet; pH 5.5-6.5; 20-25 inches (50-65 cm) thick.

**Subsoil Layers:** Dark reddish brown to dark yellowish brown loams, sandy loams and cobbly sandy loams; massive structure; non-sticky and non-plastic when wet; pH 5.0-6.0; 20-25 inches (50-65 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till beginning at a depth of 40-50 inches (100-125 cm) thick.

Soil 1200 is found in Landtypes 12 and 12-H.

## SOIL 1300

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2-3 inches (5-8 cm) thick.

**Surface Layers:** Dark brown to brown loams, sandy loams and cobbly sandy loams; moderate fine granular structure; non-sticky and non-plastic when wet; pH 5.5 to 6.5; 10-20 inches (25-50 cm) thick.

**Subsoil Layers:** Brown to dark yellowish brown sandy loams and cobbly sandy loams; moderate, medium, sub-angular blocky to massive structure; non-sticky and non-plastic when wet; pH 5.5 to 6.5; 10-20 inches (25-50 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till beginning at a depth of 30-40 inches (75-100 cm).

Soil 1300 is found in Landtypes 13 and 13-H.





## SOIL 1400

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Dark brown to dark grayish brown sandy loams, gravelly sandy loams and gravelly loamy coarse sands; single grain structure; non-sticky and non-plastic when wet; pH 5.8-6.2; 8 to 16 inches (20-40 cm) thick.

**Subsoil Layers:** Very dark grayish brown to olive brown sandy loams, gravelly sandy loams, and gravelly loams, coarse sands; single grain structure; non-sticky and non-plastic when wet; pH 5.8-6.2; 15-25 inches (40-65 cm) thick.

**Nature of Sub-Stratum:** Stratified alluvium, unconsolidated.

Soil 1400 is found on Landtypes 14, 14-H, 15 and 15-H.

## SOIL 1600

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Very dark grayish brown to dark yellowish brown gravelly sandy loams and gravelly loamy sands; single grain structures; non-sticky and non-plastic when wet; pH 5.5-6.5; 6 to 12 inches (15-30 cm) thick.

**Subsoil Layers:** Dark yellowish brown to olive brown gravelly sandy loams and gravelly loamy sands; single grain structures; non-sticky and non-plastic when wet; pH 5.0 to 6.0; 70 to 90 inches (175-230 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till and hard to moderately hard andesites and basalts beginning at a depth of 80-100 inches (205-255 cm).

Soil 1600 is found on Landtype 16.

RANGE OF PROFILE CHARACTERISTICS

## SOIL 1700

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown gravelly to very gravelly loams and sandy loams; weak to medium granular to single grain structure; non-sticky and non-plastic when wet; pH 5.5-6.0; 6-10 inches (15-25 cm) thick.

**Subsoil Layers:** Dark reddish brown and brown gravelly to very gravelly loams and sandy loams; weak to moderate, medium sub-angular blocky structure; non-sticky and non-plastic when wet; pH 5.2-5.8; 15 to 40 inches (40-100 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till and hard to moderately hard andesites and basalts beginning at a depth of 25 to 60 inches (65-150 cm).

Soil 1700 is found on Landtypes 17 and 20.

## SOIL 1800

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

**Surface Layers:** Dark brown to very dark grayish brown cobbly to very cobbly sandy loams and loamy sands; moderate, fine sub-angular blocky to single grain structure; non-sticky and non-plastic when wet; pH 6.0-6.5; 12 to 18 inches (30-45 cm) thick.

**Subsoil Layers:** Dark brown to very dark grayish brown cobbly to very cobbly sandy loams and loamy sands; single grain structure; non-sticky and non-plastic when wet; pH 5.5 to 6.0; 24-36 inches (60-90 cm) thick.

**Nature of Sub-Stratum:** Cobbly stratified alluvium, unconsolidated.

Soil 1800 is found on Landtypes 18 and 18-H.



RANGE OF PROFILE CHARACTERISTICS

## SOIL 1900

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Dark brown to very dark brown very cobbly sandy loams and very cobbly fine sandy loams; weak, fine granular to single grain structure; non-sticky and non-plastic when wet; pH 5.8 to 6.2; 10-20 inches (25-50 cm) thick.

**Subsoil Layers:** Dark brown to dark grayish brown very boccly sandy loams and very cobbly fine sandy loams; single grain structure; non-sticky and non-plastic when wet; pH 5.5 to 6.0; 24 to 36 inches (60-90 cm) thick.

**Nature of Sub-Stratum** Colluvial deposits, unconsolidated.

Soil 1900 is found on Landtypes 19 and 19-H.

## SOIL 2000

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Dark brown to dark yellowish brown gravelly to very gravelly sandy loams, weak medium granular structure; non-sticky and non-plastic when wet; pH 5.8-6.9; 2 to 6 inches (5-15 cm) thick.

**Subsoil Layers:** Dark yellowish brown to yellowish brown gravelly to very gravelly sandy loams; massive structure; non-sticky and non-plastic when wet; pH 5.2 to 5.8; 15-30 inches (40-75 cm) thick.

**Nature of Sub-Stratum:** Strongly compacted glacial till and hard to moderately hard andesites and basalts beginning at a depth of 25 to 36 inches (65-90 cm).

Soil 2000 is found on Landtypes 17-A and 20-A.

RANGE OF PROFILE CHARACTERISTICS

SOIL 2100

Litter: Needles, leaves and twigs in various stages of decomposition, ½ - 1½ inch (1-4 cm) thick.

Surface Layers: Dark brown to very dark grayish brown very bouldery to very stony loams and sandy loams; weak medium fine granular structure; non-sticky and non-plastic when wet; pH 5.8 to 6.2; 20 to 30 inches (50-75 cm) thick.

Subsoil Layers: Dark brown to reddish brown loams and gravelly sandy loams; single grain to massive structure; non-sticky and non-plastic when wet; pH 5.2 to 5.8; 40 to 50 inches (100-125 cm) thick.

Nature of Sub-Stratum: Soft to moderately hard andesites and basalts beginning at a depth of 60-72 inches (150-180 cm).

Soil 2100 is found in Landtype 21.

SOIL 2200

Litter: Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

Surface Layers: Dark brown to dark yellowish brown very cobbly loams and very cobbly sandy loams; weak to moderate fine platy structure to weak medium granular structure; non-sticky and non-plastic when wet; pH 6.0 to 6.6; 8 to 12 inches (20-30 cm) thick.

Subsoil layers: Dark yellowish brown to yellowish brown very cobbly sandy loams and very cobbly loams; massive structure; non-sticky and non-plastic when wet; pH 5.0 to 6.0; 40-60 inches (100-150 cm) thick.

Nature of Sub-Stratum: Unconsolidated colluvium over hard to moderately hard andesites and basalts beginning at a depth of 50 to 72 inches (125-180 cm).

Soil 2200 is found on Landtype 22.





SOIL 2400

Litter: Needles, leaves and twigs in various stages of decomposition, ½ - 1½ inches (1-4 cm) thick.

Surface Layers: Very dark grayish brown to dark grayish brown gravelly sandy loams and gravelly loamy sands; very weak, medium, sub-angular blocky to single grain structure; non-sticky and non-plastic when wet; pH 6.2 to 6.8; 8 to 14 inches (20-35 cm) thick.

Subsoil Layers: Dark brown to dark yellowish brown gravelly loamy sands; single grain structure; non-sticky and non-plastic when wet; pH 6.0 to 6.5; 15-35 inches (40-90 cm) thick.

Nature of Sub-Stratum: Very weakly cemented, stratified alluvium.

Soil 2400 is found on Landtype 24.

SOIL 2500

Litter: Needles, leaves and twigs in various stages of decomposition, ½ - 1½ inches (1-4 cm) thick.

Surface Layers: Dark reddish brown gravelly to very gravelly sandy loams; weak fine granular structure; non-sticky and non-plastic when wet; pH 5.8 - 6.2; 6 to 12 inches (15-30 cm) thick.

Subsoil Layers: Dark brown to dark reddish brown gravelly to very gravelly sandy loams; single grain structure; non-sticky and non-plastic when wet; pH 6.2 - 6.6; 12 to 24 inches (30-60 cm) thick.

Nature of Sub-Stratum: Loose cinders, scoria and highly fractured basalt lava.

Soil 2500 is found on Landtypes 25 and 25-H.

## SOIL 2600

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 3 inches (3-8 cm) thick.

**Surface Layers:** Very dark grayish brown to brown sandy loams, loamy sands, gravelly and cobbly sandy loams and loamy sands; weak fine granular to single grain structure; non-sticky and non-plastic when wet; pH 6.2 to 6.6; 10 to 18 inches (25-45 cm) thick.

**Subsoil Layers:** Dark yellowish brown, strong brown and yellowish brown sandy loams, loamy sands, gravelly and cobbly sandy loams and loamy sands; single grain to massive structure; non-sticky and non-plastic when wet; pH 5.8 to 6.2; 10-18 inches (25-45 cm) thick.

**Nature of Sub-Stratum:** Loose to weakly cemented deposits of pumice and ash.

Soil 2600 is found on Landtypes 26, 26-H, 27 and 27-H.

## SOIL 3000

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1-2 inches (3-5 cm) thick.

**Surface Layers:** Brown to reddish brown gravelly sandy loams and sandy loams; weak, fine, granular to single grain structure; non-sticky and non-plastic when wet; pH 6.0 to 6.5; 15-30 inches (40-75 cm) thick.

**Subsoil Layers:** Reddish brown to dark reddish brown gravelly loams and gravelly clay loams; moderate, medium sub-angular blocky; slightly sticky and slightly plastic when wet; pH 6.0 to 6.5; 40-60 inches (100-150 cm) thick.

**Nature of Sub-Stratum:** Soft andesites and basalts beginning at a depth of 48 to 96 inches (120-240 cm).

Soil 3000 is found on Landtype 30.





## SOIL 3100

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2-3 inches (5-8 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown gravelly to very gravelly loams; strong fine granular to moderate medium sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH 5.8 to 6.4; 15 to 20 inches (40-50 cm) thick.

**Subsoil Layers:** Brown to dark reddish brown gravelly to very gravelly clay loams, silty clay loams and clays; strong medium sub-angular blocky structure; sticky and plastic to very plastic when wet; pH 5.2 to 5.8; 40-60 inches (100-150 cm) thick.

**Nature of Sub-Stratum** Soft andesites and basalts beginning at a depth of 60 to 84 inches (150-210 cm).

Soil 3100 if found in Landtypes 31, 31-H, 32 and 32-H.

## SOIL 3300

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

**Surface Layers:** Reddish brown to dark reddish brown gravelly, cobbly, very gravelly, or very cobbly loams; weak, fine, sub-angular blocky to moderate fine granular structure; non-sticky and non-plastic when wet; pH 5.8 to 6.4; 25-35 inches (65-90 cm) thick.

**Subsoil Layers:** Brown to yellowish red gravelly to cobbly loams and light clay loams; moderate to strong, medium, sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH 5.2 to 6.0; 30-50 inches (75-125 cm) thick.

**Nature of Sub-Stratum:** Soft breccias, basalts, and andesites beginning at a depth of 72-96 inches (180-240 cm).

Soil 3300 is found on Landtypes 33 and 33-H.

RANGE OF PROFILE CHARACTERISTICS

## SOIL 3400

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-7 cm) thick.

**Surface Layers:** Dark brown and dark reddish brown loams and gravelly loams; strong to moderate, fine granular structure; non-sticky and non-plastic when wet; pH 6.4 to 6.8; 15 to 25 inches (40-65 cm) thick.

**Subsoil Layers:** Dark brown to reddish brown loams, clay loams, gravelly to cobbly loams and clay loams; moderate to weak medium sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH 5.6 to 6.4; 15-25 inches (40-65 cm) thick.

**Nature of Sub-Stratum** Soft andesites and basalts beginning at a depth of 30-50 inches (75-125 cm).

Soil 3400 is found on Landtypes 34, 34-H, 35, 35-H and 37.

## SOIL 3600

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-7 cm) thick.

**Surface Layers:** Dark brown very cobbly to very stoney loams and sandy loams; weak fine granular to single grain structure; non-sticky and non-plastic when wet; pH 6.0 to 6.9; 6 to 12 inches (15-30 cm) thick.

**Subsoil Layers:** Brown to dark brown very cobbly to very stoney loams; massive structure; non-sticky and non-plastic when wet; pH 5.8 to 6.2; 12 to 30 inches (30-75 cm) thick.

**Nature of Sub-Stratum** Hard andesites and basalts beginning at a depth of 24 to 48 inches (60-120 cm).

Soil 3600 if found on Landtypes 36 and 36-H.



RANGE OF PROFILE CHARACTERISTICS

## SOIL 3800

**Litter:** Needles, leaves and twigs in various stages of decomposition, ½ - 1½ inches (1-4 cm) thick.

**Surface Layers:** Dusky red to dark reddish brown very gravelly and very cobbly sandy loams; single grain to weak fine granular structure; non-sticky and non-plastic when wet; pH 5.8 to 6.2; 6-12 inches (15-30 cm) thick.

**Subsoil Layers:** Dark reddish brown to reddish brown very gravelly to very cobbly sandy loams; single grain structure; non-sticky and non-plastic when wet; pH 5.6 to 6.2; 50-75 inches (125-190 cm) thick.

**Nature of Sub-Stratum:** Loose cinders, scoria and blocky vesiculated basalt beginning at a depth of 48-72 inches (120-180 cm).

Soil 3800 is found on Landtype 38.

## SOIL 3900

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-7 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown cobbly to very cobbly loams and sandy loams; weak, fine granular structure; non-sticky and non-plastic when wet; pH 5.8 to 6.4; 20-36 inches (50-90 cm) thick.

**Subsoil Layers:** Dark reddish brown to dark yellowish brown cobbly to very cobbly loams and sandy loams; single grain to massive structure; non-sticky and non-plastic when wet; pH 5.8 to 6.4; 30 to 60 inches (75-150 cm) thick.

**Nature of Sub-Stratum:** Deep colluvial deposits, unconsolidated.

Soil 3900 is found in Landtypes 39 and 39-H.

## SOIL 4000

**Litter:** Needles, leaves and twigs in various stages of decomposition; ½ - 1½ inches (1-4 cm) thick.

**Surface Layers:** Very dark brown to black clay loams and silty clay loams; strong, fine, sub-angular blocky structure; sticky and very plastic when wet; pH 5.2 to 5.8; 10 to 15 inches (25-40 cm) thick.

**Subsoil Layers:** Dark brown to olive brown gravelly silty clay loams, silty clays and clays; strong, medium to coarse, sub-angular blocky structure; very sticky and very plastic when wet; pH 4.8 to 5.2; 20 to 30 inches (50-75 cm) thick.

**Nature of Sub-Stratum:** Soft tuffs, breccias and other pyroclastics beginning at a depth of 30 to 48 inches (75-120 cm).

Soil 4000 is found in Landtypes 40 and 40-H.

## SOILS 4200

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown gravelly to very cobbly loams; strong fine to medium sub-angular blocky and granular structure; slightly sticky and slightly plastic when wet; pH 5.8 to 6.2; 10-20 inches (25-50 cm) thick.

**Subsoil Layers:** Brown to yellowish brown gravelly to cobbly clay loams and silty clay loams; strong, coarse to medium, sub-angular blocky structure; sticky to very sticky and plastic to very plastic when wet; pH 4.8 to 5.8; 20-40 inches (50-100 cm) thick.

**Nature of Sub-Stratum:** Soft to moderately hard tuffs, breccias and other pyroclastics beginning at a depth of 24-72 inches (60-180 cm).

Soil 4200 is found on Landtypes 41, 41-H, 42 and 42-H.





## SOIL 4300

**Litter:** Needles, leaves and twigs in various stages of decomposition; 2-3 inches (5-7 cm) thick.

**Surface Layers:** Dark grayish brown to dark brown, very gravelly loams; strong, fine granular and sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH 4.8 to 5.6; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Grayish brown to very pale brown, gravelly to very gravelly clay loams and sandy clay loams; massive structure; slightly sticky and slightly plastic when wet; pH 4.6 to 5.6; 5 to 10 inches (10-25 cm) thick.

**Nature of Sub-Stratum:** Moderately hard tuffs, breccias and other pyroclastics beginning at a depth of 12-36 inches (30-90 cm).

Soil 4300 is found on Landtypes 43 and 43-H.

## SOIL 4600

**Litter:** Needles, leaves and twigs in various stages of decomposition; 2 to 3 inches (5-7 cm) thick.

**Surface Layers:** Very dark grayish brown to dark grayish brown, very gravelly loams to sandy loams; weak, fine, granular structure; non-sticky and non-plastic when wet; pH 6.2 to 6.6; 6-12 inches (15-30 cm) thick.

**Subsoil Layers:** Brown to dark yellowish brown very gravelly loams, sandy loams and sandy clay loams; massive structure; slightly sticky and slightly plactic when wet; pH 5.8-6.2; 25-40 inches (65-100 cm) thick.

**Nature of Sub-Stratum:** Weathered coarse crystaline mafic intrusive rocks of varying hardness beginning at a depth of 36-60 inches (90-180 cm).

Soil 4600 is found on Landtype 46.

SOIL FERTILITY LAB DATA*

Cascade Soils

| Soil # | Depth (cm) | Approximate Elevation (m) | pH | P (ppm) | K (ppm) | Ca (meq/100 g) | Mg (meq/100 g) | Total N (%) | Organic Matter (%) | CEC (meq/100 g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 0-12 cm | 1500 m | 5.9 | 20 | 124 | 5.1 | 0.43 | 0.61 | 20.96 | 44.92 |
| 1100 | 0-12 cm | 1450 m | 6.3 | 8 | 228 | 11.8 | 0.69 | 0.52 | 19.27 | 41.31 |
| 1200 | 0-12 cm | 1350 m | 6.6 | 6 | 128 | 7.7 | 0.89 | 0.40 | 13.32 | 41.94 |
| 1300 | 0-12 cm | 1300 m | 6.2 | 5 | 88 | 6.1 | 1.70 | 0.15 | 7.49 | 30.56 |
| 1400 | 0-12 cm | 900 m | 5.9 | 190 | 88 | 3.7 | 0.30 | 0.12 | 9.66 | 12.40 |
| | 12-25 cm | -- | 6.2 | 33 | 48 | 1.5 | 0.16 | 0.06 | 2.07 | 9.61 |
| 1600 | 0-12 cm | 1700 m | 5.8 | 37 | 128 | 2.3 | 0.30 | 0.10 | 6.94 | 12.30 |
| | 12-25 cm | -- | 6.2 | 15 | 96 | 1.3 | 0.20 | 0.06 | 2.58 | 10.31 |
| 1700 | 0-12 cm | 1750 m | 5.5 | 8 | 100 | 1.5 | 0.20 | 0.31 | 14.11 | 47.31 |
| 1800 | 0-12 cm | 1200 m | 6.1 | 131 | 128 | 5.5 | 0.63 | 0.11 | 4.08 | 16.27 |
| 1900 | 0-12 cm | 1100 m | 6.2 | 32 | 250 | 11.4 | 1.40 | 0.30 | 14.62 | 47.15 |
| 2000 | 0-12 cm | 1800 m | 5.7 | 6 | 100 | 0.7 | 0.16 | 0.13 | 8.64 | 24.11 |
| 2100 | 0-12 cm | 1700 m | 5.8 | 11 | 180 | 2.1 | 0.25 | 0.22 | 13.88 | 34.26 |
| 2200 | 0-12 cm | 1750 m | 5.6 | 6 | 64 | 0.7 | 0.10 | 0.11 | 6.65 | 21.86 |
| | 12-25 cm | -- | 6.1 | 5 | 60 | 0.4 | 0.10 | 0.08 | 4.09 | 21.80 |
| 2400 | 0-12 cm | 900 m | 6.3 | 8 | 10 | 7.7 | 0.76 | 0.26 | 14.23 | 27.92 |
| | 12-25 cm | -- | 6.7 | 7 | 64 | 6.8 | 0.35 | 0.17 | 5.87 | 21.10 |
| 2500 | 0-12 cm | 1200 m | 7.2 | 4 | 124 | 15.9 | 1.60 | 0.26 | 11.89 | 36.25 |
| 2600 | 0-12 cm | 1200 m | 5.5 | 10 | 76 | 0.9 | 0.25 | 0.16 | 6.70 | 16.70 |
| | 12-25 cm | -- | 5.8 | 9 | 54 | 0.6 | 0.16 | 0.09 | 3.73 | 10.95 |
| 3000 | 0-12 cm | 1100 m | 6.1 | 21 | 364 | 6.1 | 0.69 | 0.22 | 5.15 | 25.35 |
| | 75-90 cm | -- | 6.2 | 6 | 364 | 8.6 | 1.40 | 0.03 | 0.82 | 27.98 |
| 3100 | 0-12 cm | 1200 m | 6.5 | 8 | 398 | 10.4 | 0.92 | 0.21 | 8.92 | 34.31 |
| 3300 | 0-12 cm | 1200 m | 6.3 | 8 | 340 | 9.7 | 1.10 | 0.24 | 9.12 | 31.84 |
| | 12-25 cm | -- | 6.3 | 7 | 256 | 4.5 | 0.63 | 0.12 | 4.14 | 22.82 |
| 3400 | 0-12 cm | 1200 m | 6.8 | 22 | 760 | 19.6 | 2.40 | 0.19 | 8.80 | 33.10 |
| | 12-25 cm | -- | 6.6 | 13 | 392 | 10.8 | 2.50 | 0.11 | 3.90 | 25.10 |
| 3600 | 0-12 cm | 1350 m | 6.4 | 7 | 340 | 9.1 | 0.82 | 0.18 | 7.75 | 30.66 |
| 3800 | 0-12 cm | 1500 m | 6.5 | 6 | 228 | 4.5 | 0.92 | 0.20 | 7.52 | 31.47 |
| 3900 | 0-12 cm | 1450 m | 6.1 | 23 | 140 | 3.5 | 0.30 | 0.11 | 5.41 | 17.88 |
| 4000 | 0-12 cm | 1200 m | 5.9 | 40 | 880 | 27.0 | 6.60 | 0.25 | 10.30 | 66.32 |
| 4200 | 0-12 cm | 1250 m | 5.6 | 28 | 304 | 5.3 | 0.76 | 0.27 | 12.57 | 35.66 |
| 4300 | 0-12 cm | 1200 m | 6.2 | 52 | 380 | 14.1 | 2.40 | 0.14 | 5.77 | 29.05 |
| 4600 | 0-12 cm | 900 m | 6.0 | 38 | 174 | 8.3 | 0.82 | 0.10 | 5.36 | 20.73 |

*Analyses were done at the Oregon State University Soils Testing Laboratory, Corvallis, Oregon.



## Report of Laboratory Test Results

### SOIL 1000

No Data

Similar to Soil 1100 in Engineering Properties

### SOIL 1100

Depth: 10-50" Unified: GM AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 77.3

Optimum moisture - % 30.4

Specific gravity, #10 = 2.70

California Bearing Ratio: 95% = 14
90% = 6
85% = 1

Hydrometer Analysis

| Diameter MM | Percent finer than |
|---|---|
| 0.0323 | 10.7 |
| 0.0219 | 8.0 |
| 0.0131 | 5.5 |
| 0.0089 | 4.5 |
| 0.0067 | 3.4 |
| 0.0033 | 1.9 |
| 0.0014 | 0.7 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 97.4 |
| 2½" | 94.6 |
| 2" | 91.7 |
| 1½" | 87.5 |
| 1" | 80.4 |
| 3/4" | 75.5 |
| 1/2" | 66.1 |
| 3/8" | 60.9 |
| #4 | 48.2 |
| #10 | 37.6 |
| #20 | 31.8 |
| #40 | 26.7 |
| #60 | 22.4 |
| #100 | 18.8 |
| #200 | 14.8 |

Nonplastic, silty gravel, poorly drained, slight compressibility; reasonably stable in fill. Good as subgrade if not subject to frost action and fair as base course.

## Report of Laboratory Test Results

### SOIL 1200

Depth: 20-48" Unified: GM AASHO: A-2-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 90.8

Optimum moisture - % 27.0

Specific gravity, #10(-) only 2.88

California Bearing Ratio: 95% = 18
90% = 5
85% = 2

| Hydrometer Analysis | |
|---|---|
| Diameter MM 1/ | Percent Finer than |
| 0.027 | 23.5 |
| 0.018 | 20.4 |
| 0.011 | 17.6 |
| 0.007 | 15.4 |
| 0.006 | 13.7 |
| 0.003 | 9.8 |
| 0.001 | 6.8 |

| Mechanical Analysis | |
|---|---|
| Sieve Size | % Passing |
| 3" | 100 |
| 2½" | 95.6 |
| 2" | 91.5 |
| 1½" | 87.2 |
| 1" | 79.3 |
| 3/4" | 74.2 |
| 1/2" | 70.6 |
| 3/8" | 67.8 |
| #4 | 60.7 |
| #10 | 53.2 |
| #20 | 49.1 |
| #40 | 44.5 |
| #60 | 40.1 |
| #100 | 35.3 |
| #200 | 29.5 |

Nonplastic, silty gravel, poorly drained, slight compressibility; reasonably stable as fill. Good subgrade when not subject to frost action.

---

### SOIL 1300

Depth: 13-30" Unified: GM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 80.9

Optimum moisture - % 29.2

Specific gravity, #10(-) only 2.68

California Bearing Ratio: 95% = 5
90% = 2
85% = 1

| Hydrometer Analysis | |
|---|---|
| Diameter MM 1/ | Percent Finer Than |
| 0.029 | 16.0 |
| 0.020 | 12.3 |
| 0.013 | 8.5 |
| 0.009 | 6.7 |
| 0.006 | 5.0 |
| 0.003 | 2.7 |
| 0.001 | 1.3 |

| Mechanical Analysis | |
|---|---|
| Sieve Size | % Passing |
| 3" | 100 |
| 2½" | 94.8 |
| 2" | 89.7 |
| 1½" | 81.4 |
| 1" | 74.3 |
| 3/4" | 69.0 |
| 1/2" | 61.4 |
| 3/8" | 58.4 |
| #4 | 49.3 |
| #10 | 39.4 |
| #20 | 35.8 |
| #40 | 32.8 |
| #60 | 30.6 |
| #100 | 28.2 |
| #200 | 24.3 |

Nonplastic, silty gravel, poorly drained, slight compressibility; reasonable stable as fill. Good subgrade when not subject to frost action.



## Report of Laboratory Test Results

### SOIL 1400

Depth: 10-30" Unified: SP AASHO: A-3
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 115.8

Optimum moisture - % 14.8

Specific gravity, #10(-) only 3.07

California Bearing Ratio: 95% = 14
90% = 4
85% = 2

| Hydrometer Analysis | |
|---|---|
| Diameter MM 1/ | Percent Finer Than |
| 0.035 | 1.7 |
| 0.022 | 1.3 |
| 0.013 | 1.1 |
| 0.009 | 0.8 |
| 0.006 | 0.4 |
| 0.003 | 0.2 |
| 0.001 | 0.1 |

| Mechanical Analysis | |
|---|---|
| Sieve Size | % Passing |
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.9 |
| 3/4" | 99.7 |
| 1/2" | 99.2 |
| 3/8" | 98.8 |
| #4 | 96.2 |
| #10 | 88.1 |
| #20 | 71.3 |
| #40 | 42.9 |
| #60 | 20.9 |
| #100 | 9.4 |
| #200 | 4.6 |

Poorly graded sand, well drained, no expansion upon saturation. Reasonably stable when dense. Can be used as fill material or as subgrade if protected from frost.

---

### SOIL 1600

Depth: 10-40" Unified: SM AASHO: A-1
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 86.3

Optimum moisture - % 24.7

Specific gravity, #10(-) only 2.66

California Bearing Ratio: 95% = 20
90% = 13
85% = 6

| Hydrometer Analysis | |
|---|---|
| Diameter MM 1/ | Percent Finer Than |
| 0.036 | 8.1 |
| 0.024 | 6.1 |
| 0.014 | 4.0 |
| 0.009 | 2.8 |
| 0.007 | 1.6 |
| 0.003 | 1.1 |
| 0.001 | 0.6 |

| Mechanical Analysis | |
|---|---|
| Sieve Size | % Passing |
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.8 |
| 3/4" | 99.6 |
| 1/2" | 98.2 |
| 3/8" | 97.6 |
| #4 | 92.5 |
| #10 | 78.7 |
| #20 | 65.7 |
| #40 | 49.0 |
| #60 | 33.7 |
| #100 | 22.3 |
| #200 | 14.0 |

Sandy silt, well drained, nonexpansive; reasonable stable when dense. Can be used as embankment and subgrade when not subject to frost.

## Report of Laboratory Test Results

### SOIL 1700

No Data

Similar to Soil 2400 in Engineering Properties

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### SOIL 1800

Depth: 15-40" Unified: GP AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 108.3

Optimum moisture - % 15.6

Specific gravity, #10(-) only 2.77

California Bearing Ratio: 95% = 15
90% = 3
85% = < 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0360 | 3.3 |
| 0.0236 | 2.7 |
| 0.0138 | 1.9 |
| 0.0092 | 1.7 |
| 0.0069 | 1.1 |
| 0.0033 | 0.5 |
| 0.0014 | 0.2 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 8" | 100 |
| 5" | 94.1 |
| 3" | 92.8 |
| 2½" | 90.8 |
| 2" | 79.7 |
| 1½" | 73.2 |
| 1" | 68.3 |
| 3/4" | 65.4 |
| 1/2" | 60.4 |
| 3/8" | 57.6 |
| #4 | 47.6 |
| #10 | 37.8 |
| #20 | 28.0 |
| #40 | 18.8 |
| #60 | 11.8 |
| #100 | 7.5 |
| #200 | 4.7 |

Nonplastic, poorly graded gravel, well drained; reasonably stable in fill.
Very good subgrade, fair as base course.



## Report of Laboratory Test Results

### SOIL 1900

Depth: 15-40" Unified: GM AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 95.8

Optimum moisture - % 22.1

Specific gravity, #10(-) only 2.80

California Bearing Ratio: 95% = 12
90% = 6
85% = 3

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.032 | 7.6 |
| 0.022 | 5.4 |
| 0.013 | 4.1 |
| 0.009 | 3.3 |
| 0.007 | 2.2 |
| 0.003 | 1.4 |
| 0.001 | 0.8 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 88.3 |
| 2½" | 84.1 |
| 2 | 79.3 |
| 1½" | 74.0 |
| 1" | 65.2 |
| 3/4" | 59.5 |
| 1/2" | 54.6 |
| 3/8" | 51.4 |
| #4 | 45.1 |
| #10 | 38.1 |
| #20 | 32.5 |
| #40 | 27.1 |
| #60 | 21.9 |
| #100 | 17.0 |
| #200 | 11.3 |

Nonplastic, silty gravel, poorly drained; slight compressibility.
Reasonably stable in fill, good as subgrade, fair as base course.

---

### SOIL 2000

Depth: 10-26" Unified: SM AASHO: A-3
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 83.6

Optimum moisture - % 28.9

Specific gravity, #10(-) only 2.71

California Bearing Ratio: 95% = 22
90% = 13
85% = 6

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.033 | 15.2 |
| 0.023 | 8.2 |
| 0.013 | 7.0 |
| 0.009 | 5.5 |
| 0.007 | 3.9 |
| 0.003 | 2.6 |
| 0.001 | 1.3 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 98.5 |
| 3/4" | 97.0 |
| 1/2" | 94.3 |
| 3/8" | 92.1 |
| #4 | 85.5 |
| #10 | 75.3 |
| #20 | 63.8 |
| #40 | 51.4 |
| #60 | 41.1 |
| #100 | 33.1 |
| #200 | 25.1 |

Sandy silt, fair drainage, slightly expansive. Reasonably stable when dense, can be used as subgrade and embankment when protected from frost.

## Report of Laboratory Test Results

### SOIL 2100

No Data

Extremely Bouldery

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### SOIL 2200

Depth: 10-40" Unified: GM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 70.5

Optimum moisture - % 37.8

Specific gravity, #10(-) only 2.52

California Bearing Ratio: 95% = 6
90% = 3
85% = <2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.035 | 11.9 |
| 0.025 | 8.4 |
| 0.015 | 5.5 |
| 0.010 | 3.9 |
| 0.007 | 2.7 |
| 0.004 | 0.9 |
| 0.002 | 0.2 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 97.6 |
| 2" | 94.8 |
| 1½" | 87.7 |
| 1" | 75.3 |
| 3/4" | 68.4 |
| 1/2" | 60.6 |
| 3/8" | 58.2 |
| #4 | 51.4 |
| #10 | 46.2 |
| #20 | 42.7 |
| #40 | 37.4 |
| #60 | 31.6 |
| #100 | 26.1 |
| #200 | 19.3 |

Nonplastic, silty gravel, poorly drained, slightly expansive. Reasonably stable as fill, good as subgrade.



## Report of Laboratory Test Results

### SOIL 2400

Depth: 15-40" Unified: SM AASHO: A-2-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 96.5

Optimum moisture - % 23.6

Specific gravity, #10(-) only 2.78

California Bearing Ratio: 95% = 13
90% = 5
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.033 | 15.0 |
| 0.022 | 11.0 |
| 0.013 | 7.5 |
| 0.009 | 6.4 |
| 0.007 | 5.1 |
| 0.003 | 3.1 |
| 0.001 | 1.3 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 98.3 |
| 3/4" | 97.2 |
| 1/2" | 95.2 |
| 3/8" | 93.5 |
| #4 | 90.2 |
| #10 | 83.9 |
| #20 | 67.9 |
| #40 | 53.6 |
| #60 | 42.9 |
| #100 | 32.6 |
| #200 | 21.9 |

Nonplastic, silty sand, poorly drained; slight compressibility. Reasonably stable as fill when dense, fair as subgrade when not subject to frost.

---

### SOIL 2500

Depth: 10-30" Unified: GM AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 85.8

Optimum moisture - % 26.3

Specific gravity, #10(-) only 2.78

California Bearing Ratio: 95% = 20
90% = 5
85% = <1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.033 | 6.3 |
| 0.022 | 3.9 |
| 0.013 | 2.4 |
| 0.009 | 1.7 |
| 0.007 | 1.1 |
| 0.003 | 0.2 |
| 0.001 | 0.04 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 98.1 |
| 2½" | 95.2 |
| 2" | 90.3 |
| 1½" | 68.5 |
| 1" | 51.3 |
| 3/4" | 47.4 |
| 1/2" | 43.4 |
| 3/8" | 42.2 |
| #4 | 39.2 |
| #10 | 35.3 |
| #20 | 30.5 |
| #40 | 26.0 |
| #60 | 22.9 |
| #100 | 19.3 |
| #200 | 13.3 |

Nonplastic, silty gravel, poor drainage; slight compressibility. Reasonably stable in fills, good subgrade, fair base course.

## Report of Laboratory Test Results

**SOIL 2600**

Depth: 10-30" Unified: SM AASHO: A-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 67.1

Optimum moisture - % 22.3

Specific gravity, #10(-) only 2.53

California Bearing Ratio: 95% = 12
90% = 5
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.031 | 32.9 |
| 0.021 | 28.4 |
| 0.009 | 19.4 |
| 0.007 | 9.3 |
| 0.003 | 4.1 |
| 0.001 | 1.8 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 99.4 |
| 2½" | 99.4 |
| 2" | 99.4 |
| 1½" | 99.2 |
| 1" | 98.6 |
| 3/4" | 98.4 |
| 1/2" | 97.0 |
| 3/8" | 96.4 |
| #4 | 92.5 |
| #10 | 87.2 |
| #20 | 79.8 |
| #40 | 68.7 |
| #60 | 58.7 |
| #100 | 50.1 |
| #200 | 40.1 |

Nonplastic, silty sand, poorly drained; slight compressibility. Frost susceptable. Reasonably stable as fill when dense, fair as subgrade with frost protection.

---

**SOIL 3000**

Depth: 10-20" Unified: SM AASHO: A-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 68.6

Optimum moisture - % 36.8

Specific gravity, #10(-) only 2.95

California Bearing Ratio: 95% = 24
90% = 16
85% = 10

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 24.3 |
| 0.021 | 16.7 |
| 0.012 | 9.7 |
| 0.008 | 6.7 |
| 0.006 | 4.5 |
| 0.003 | 2.6 |
| 0.001 | 1.1 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.8 |
| 3/4" | 99.5 |
| 1/2" | 98.8 |
| 3/8" | 98.4 |
| #4 | 96.3 |
| #10 | 90.1 |
| #20 | 83.5 |
| #40 | 75.1 |
| #60 | 66.3 |
| #100 | 56.3 |
| #200 | 40.9 |

Sandy silt, pumiceous material, fair drainage. Little expansion, reasonable stable when dense. Can be used as subgrade when protected from frost.



## Report of Laboratory Test Results

**SOIL 3000**
Sub-soil

Depth: 36-48" Unified: GM AASHO: A-5
Liquid Limit: 43 Plasticity Index: 9

Maximum density - p.c.f. 91.2

Optimum moisture - % 29.3

Specific gravity, #10(-) only 2.85

California Bearing Ratio: 95% = 6
90% = 3
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0312 | 34.1 |
| 0.0207 | 29.4 |
| 0.0122 | 25.4 |
| 0.0082 | 22.1 |
| 0.0062 | 19.4 |
| 0.0030 | 14.8 |
| 0.0013 | 10.5 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 95.9 |
| 2½" | 90.3 |
| 2" | 82.5 |
| 1½" | 75.7 |
| 1" | 72.0 |
| 3/4" | 69.6 |
| 1/2" | 68.3 |
| 3/8" | 67.0 |
| #4 | 65.1 |
| #10 | 62.9 |
| #20 | 59.6 |
| #40 | 55.1 |
| #60 | 50.5 |
| #100 | 45.8 |
| #200 | 40.1 |

Sandy silty gravel, slightly plastic and compressible, poorly drained. Reasonably stable as fill, good as subgrade if not subject to frost, fair as base course.

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**SOIL 3100**

Depth: 20-40" Unified: MH AASHO: A-7-5
Liquid Limit: 58 Plasticity Index: 17

Maximum density - p.c.f. 75.6

Optimum moisture - % 37.3

Specific gravity, #10(-) only 2.79

California Bearing Ratio: 95% = 2
90% = 1
85% = < 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0309 | 62.8 |
| 0.0203 | 58.6 |
| 0.0120 | 51.1 |
| 0.0081 | 45.8 |
| 0.0061 | 41.6 |
| 0.0030 | 33.1 |
| 0.0013 | 27.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3/8" | 100 |
| #4 | 99.8 |
| #10 | 99.1 |
| #20 | 96.2 |
| #40 | 89.9 |
| #60 | 86.0 |
| #100 | 81.5 |
| #200 | 74.6 |

Medium plasticity, sandy silt of high compressibility, poor drainage, poor stability. Not suitable for fills, poor as subgrade.

## Report of Laboratory Test Results

### SOIL 3300

Depth: 15-40" Unified: GM AASHO: A-2-4
Liquid Limit: 37 Plasticity Index: 7

Maximum density - p.c.f. 94.7

Optimum moisture - % 25.1

Specific gravity, #10(-) only 2.71

California Bearing Ratio: 95% = 16
90% = 8
85% = 4

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.029 | 23.1 |
| 0.019 | 20.4 |
| 0.015 | 17.7 |
| 0.008 | 15.7 |
| 0.006 | 13.6 |
| 0.003 | 8.9 |
| 0.001 | 6.1 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 96.1 |
| 2½" | 93.1 |
| 2" | 90.0 |
| 1½" | 83.9 |
| 1" | 76.4 |
| 3/4" | 72.0 |
| 1/2" | 67.2 |
| 3/8" | 66.0 |
| #4 | 61.8 |
| #10 | 44.5 |
| #20 | 43.3 |
| #40 | 41.1 |
| #60 | 38.3 |
| #100 | 34.8 |
| #200 | 29.9 |

Slightly plastic, silty gravel, poorly drained; reasonable stable as embankment. Can be used as subgrade or base course.

---

### SOIL 3400

Depth: 20-40" Unified: SM AASHO: A-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 86.6

Optimum moisture - % 27.8

Specific gravity, #10(-) only 2.75

California Bearing Ratio: 95% = 14
90% = 6
85% = 2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.029 | 32.7 |
| 0.020 | 27.9 |
| 0.012 | 22.7 |
| 0.008 | 20.1 |
| 0.006 | 16.6 |
| 0.003 | 11.3 |
| 0.001 | 7.1 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.5 |
| 3/4" | 98.8 |
| 1/2 | 97.5 |
| 3/8" | 96.9 |
| #4 | 90.7 |
| #10 | 80.5 |
| #20 | 71.8 |
| #40 | 63.1 |
| #60 | 55.7 |
| #100 | 48.8 |
| #200 | 40.5 |

Nonplastic, silty sand, poorly drained; slight compressibility. Reasonably stable when dense in fill, fair as subgrade, frost susceptable.



## Report of Laboratory Test Results

### SOIL 3600

No Data

Similar to Soil 3900 in Engineering Properties

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### SOIL 3800

Depth: 10-30" Unified: SM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 83.9

Optimum moisture - % 28.4

Specific gravity, #10(-) only 2.75

California Bearing Ratio: 95% = 16
90% = 11
85% = 6

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.033 | 12.8 |
| 0.022 | 9.3 |
| 0.009 | 4.5 |
| 0.007 | 3.0 |
| 0.003 | 1.1 |
| 0.001 | 0.1 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 97.4 |
| 2" | 94.7 |
| 1½" | 91.4 |
| 1" | 84.9 |
| 3/4" | 81.3 |
| 1/2" | 74.9 |
| 3/8" | 70.6 |
| #4 | 61.9 |
| #10 | 50.9 |
| #20 | 41.0 |
| #40 | 34.5 |
| #60 | 30.0 |
| #100 | 25.9 |
| #200 | 19.7 |

Nonplastic, silty sand, poorly drained, slightly expansive. Reasonably stable in fill when dense, fair as subgrade. Susceptable to frost action.

## Report of Laboratory Test Results

### SOIL 3900

Depth: 15-40" Unified: GM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 91.6

Optimum moisture - % 22.3

Specific gravity, #10(-) only 2.79

California Bearing Ratio: 95% = 22
90% = 5
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 14.3 |
| 0.020 | 11.3 |
| 0.012 | 8.5 |
| 0.008 | 7.3 |
| 0.006 | 5.7 |
| 0.003 | 3.2 |
| 0.001 | 1.8 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 96.7 |
| 2" | 93.0 |
| 1½" | 90.1 |
| 1" | 81.3 |
| 3/4" | 76.9 |
| 1/2" | 70.6 |
| 3/8" | 66.9 |
| #4 | 58.2 |
| #10 | 46.9 |
| #20 | 40.2 |
| #40 | 35.0 |
| #60 | 30.7 |
| #100 | 26.3 |
| #200 | 20.6 |

Nonplastic, silty gravel, poorly drained; slight compressibility. Reasonably stable as fill, good subgrade when not subject to frost action.

---

### SOIL 4000

Depth: 10-24" Unified: OH AASHO: A-7-5
Liquid Limit: 81 Plasticity Index: 30

Maximum density - p.c.f. 68.9

Optimum moisture - % 40.2

Specific gravity, #10(-) only 2.76

California Bearing Ratio: 95% = 2
90% = 1
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 76.7 |
| 0.020 | 72.4 |
| 0.016 | 68.1 |
| 0.008 | 64.5 |
| 0.006 | 61.7 |
| 0.003 | 57.7 |
| 0.001 | 47.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.5 |
| 3/4" | 99.3 |
| 1/2" | 99.0 |
| 3/8" | 98.7 |
| #4 | 98.5 |
| #10 | 97.2 |
| #20 | 95.5 |
| #40 | 92.1 |
| #60 | 89.0 |
| #100 | 86.1 |
| #200 | 82.4 |

Highly compressible, organic clay, impervious, not suitable for construction.



## Report of Laboratory Test Results

### SOIL 4200

Depth: 10-30" Unified: ML AASHO: A-4
Liquid Limit: 39 Plasticity Index: 34

Maximum density - p.c.f. 91.2

Optimum moisture - % 27.6

Specific gravity, #10(-) only 2.86

California Bearing Ratio: 95% = 7
90% = 3
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0316 | 42.9 |
| 0.0207 | 40.1 |
| 0.0123 | 32.7 |
| 0.0083 | 29.0 |
| 0.0062 | 25.3 |
| 0.0030 | 17.8 |
| 0.0013 | 12.8 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 99.8 |
| 2" | 99.5 |
| 1½" | 98.7 |
| 1" | 96.6 |
| 3/4" | 94.6 |
| 1/2" | 94.3 |
| 3/8" | 94.0 |
| #4 | 94.0 |
| #10 | 88.5 |
| #20 | 81.6 |
| #40 | 72.7 |
| #60 | 65.4 |
| #100 | 59.3 |
| #200 | 52.7 |

Slightly plastic silt of low compressibility, poorly drained. Not very stable in fills; must be compacted to high density to be used.

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### SOIL 4300

Depth: 10_15" Unified: SM-d AASHO: A-2-5
Liquid Limit: 51 Plasticity Index: 8

Maximum density p.c.f. 78.1

Optimum moisture % 34.4

Specific gravity, #10() only 2.50

California Bearing Ratio: 95% = 5
90% = 2
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0309 | 34.67 |
| 0.0200 | 31.80 |
| 0.0121 | 26.81 |
| 0.0087 | 23.94 |
| 0.0064 | 19.15 |
| 0.0032 | 13.40 |
| 0.0014 | 7.81 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 1½" | 100 |
| 1" | 99 |
| 3/4" | 95 |
| 1/2" | 89 |
| 3/8" | 83 |
| #4 | 72 |
| #10 | 64 |
| #20 | 59 |
| #40 | 52 |
| #60 | 46 |
| #100 | 43 |
| #200 | 38.8 |

Slightly plastic, silty sand of slight compressibility, poorly drained. Reasonably stable in fills when dense, fair as subgrade if not subjected to frost action.

## Report of Laboratory Test Results

SOIL 4600

Depth: 10-30" Unified: SM AASHO: A-4
Liquid Limit: 31 Plasticity Index: 1

Maximum density - p.c.f. 100.1

Optimum moisture - % 19.8

Specific gravity, #10(-) only 2.56

California Bearing Ratio: 95% = 13
90% = 6
85% = 3

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.036 | 25.5 |
| 0.023 | 22.3 |
| 0.014 | 19.2 |
| 0.009 | 16.0 |
| 0.007 | 12.0 |
| 0.003 | 5.5 |
| 0.001 | 1.7 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | |
| 1" | |
| 3/4" | 100 |
| 1/2" | 99.9 |
| 3/8" | 99.9 |
| #4 | 99.8 |
| #10 | 74.7 |
| #20 | 63.7 |
| #40 | 53.8 |
| #60 | 47.1 |
| #100 | 41.6 |
| #200 | 36.4 |

Slightly plastic, sandy silt, slight expansion, well drained. Reasonably stable when dense. Can be used as embankment and subgrade when not subject to frost.

1/ Partical size computed from Hydrometer readings.





## MISCELLANEOUS UNITS 1/

0 - Very Steep, Sparsely Vegetated Pumice Canyon Walls

These are the result of deeply incised drainages in old ash flows that blanket the terrain. Slopes are in excess of 70 percent. Ravel is a common occurrence and vegetation is very limited.

1 - River and Creek Wash Along Stream Channels

These areas are periodically flooded and/or washed. They are unvegetated or support sparse, rapid growing riparian vegetation tolerant to the site conditions. Soil materials consist of sand, gravel and boulders.

3 - Rock Outcrop and Talus

This mapping unit is a complex of various kinds of rock outcrop, talus and soils which are highly variable in depth, rock content, slope and moisture status. The unit is generally found along upper sideslopes, ridgetops and areas exhibiting glacial pluck and scour characteristics.

4 - Sparsely Vegetated, Recent Lava, Cinder and Scoria Flows

Recent lava, cinder and scoria flows issued from cones and fissures. These areas exhibit slight or no glacial modification. Vegetation on this unit is generally sparse and of low quality. Mechanical operations on this unit may be limited by slope, rock content, or both.

5 - Very Steep, Highly Dissected Slopes

Highly dissected land forms developing on long, steep slopes. Soil depths vary from shallow to very deep and include a high percentage of rock outcrop, cliffs and talus. Timber type and site quality vary considerably with elevation and aspect. Management on this unit is severely restricted by slope, degree of dissection and broken, irregular topography.

6 - Permanently Wet Meadows

Areas that have high water tables or ponded water. This unit is not limited to a specific topographic position but may occur along streams, at the base of cliffs, adjacent to lakes, on hill slopes, etc. This unit occurs as a natural component of Landtype Unit 13, 13-H, 20 and 20-A. Vegetation consists of sedges, rushes, grasses, sub-alpine fir, Englemann spruce and lodgepole pine. This unit provides valuable forage for wildlife and livestock.

1/ See Mapping Unit Definitions (Appendix) and the Table of Landtype Characteristics.

7 - Seasonally Dry Meadows and Scabland

Unforested areas on slopes of less than 35 percent which become dry during the summer months and support various grasses, forbs, sedges and shrubs. This unit is not limited to a specific topographic position. Small patches of timber may be included in this unit. This unit is valuable for wildlife and livestock forage production although total forage production is substantially less than that of unit 6.

8 - Seasonally Dry Meadows and Scabland

Unforested areas on slopes of 35 to 75 percent which become dry during the summer months and support various grasses, forbs, sedges and shrubs. Small patches of timber may be included. These areas are valuable for wildlife and livestock forage production. They are not limited to a specific topographic position.

9 - Old Landflows and Landslide Deposits Consisting of Interconnected Steep Slopes and Benches

These areas consist of slopes formed and shaped by mass movement processes. These processes result in churned soil deposits. in which drainage may range from poor to excessive. Soil, bedrock and vegetation are highly variable. These variabilities make site-by-site evaluation mandatory for management.



LANDTYPE UNIT 10

Landtype unit 10 consists dominantly of Landtype 10 and minor amounts of Landtypes 11 and 12.

The major soil profile type found on this Landtype is number 1000. Soils on Landtype 10 are comprised of sandy loams which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 10-20 inches (25-50 cm) in thickness and contain 40-60 percent gravel and cobble. Soils are forming in glacial till deposits and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m) beneath compacted till.

Typically, Landtype 10 is associated with lateral moraine ridgetops and occasionally with gently rolling ground moraine surfaces at elevations ranging from 4000 to 5000 feet (1220-1525 m) on slopes ranging from 10-35%. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

LANDTYPE UNIT 10-H

Landtype unit 10-H consists dominantly of Landtype 10-H and minor amounts of Landtypes 11-H, 17 and 17-A.

This Landtype is found between elevations of 5000 to 6000 feet (1525-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 10.

LANDTYPE UNIT 11

Landtype unit 11 consists dominantly of Landtype 11 and minor amounts of Landtypes 10, 12 and 23.

The major soil profile type found on this Landtype is number 1100. Soils on Landtype 11 are comprised of sandy loams which have surface layers totaling 20-40 inches (50-100 cm) in thickness, sub-soil layers 30-40 inches (75-100 cm) in thickness and contain 35-75 percent gravel and cobble. Soils are forming in glacial till deposits and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m).

Typically, Landtype 11 is associated with morainic side slope positions at elevations ranging from 4000 to 5000 feet (1220-1525 m) with slopes 20-45%. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 11-H

Landtype unit 11-H consists dominantly of Landtype 11-H and minor amounts of Landtypes 10-H, 12-H, 23, 17 and 17-A.

This Landtype is found between elevations of 5000 to 6000 feet (1525-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 11.

## LANDTYPE UNIT 12

Landtype unit 12 consists dominantly of Landtype 12 and minor amounts of Landtypes 11, 13 and 34.

The major soil profile type found on this Landtype is number 1200. Soils on Landtype 12 are comprised of loams and sandy loams which have surface layers totaling 20-25 inches (50-65 cm) in thickness, sub-soil layers 20-25 inches (50-65 cm) in thickness and contain 20-45 percent gravel and cobble. Soils are forming in glacial till deposits and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m) beneath compacted till.

Typically, Landtype 12 is associated with flat to gently rolling till and ground moraine surfaces at elevations ranging from 4000 to 5000 feet (1220-1525 m) on slopes 5-15 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 12-H

This Landtype unit 12-H consists cominantly of Landtype 12-H and minor amounts of Landtypes 11-H, 13-H, 16, 20 and 20-A.

This Landtype is found at elevations between 5000 and 6000 feet (1525-1830 m) in an upper forest environment. In most other respects, it is very similar to Landtype 12.



## LANDTYPE UNIT 13

Landtype unit 13 consists dominantly of Landtype 13 and minor amounts of Landtypes 11 and 12.

The major soil profile type found on this Landtype is number 1300. Soils on Landtype 13 are comprised of loams and sandy loams which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 10-20 inches (25-50 cm) in thickness and contain 30-95 percent cobble and gravel. Soils are forming in glacial till and are somewhat drained with a perched water table during most or all of the year.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m).

Typically, Landtype unit 13 is associated with slightly concave positions on flat to gently sloping till surface and at the base of lateral moraine side slopes at elevations ranging from 4000 to 5000 feet (1220-1525 m) on slopes 5-15%. The slope stability class is I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 13-H

Landtype unit 13-H consists dominantly of Landtype 13-H with minor amounts of 11-H, 12-H, 16 and 20-A.

This Landtype is found at elevations between 5000 and 6000 feet (1525-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 13.

## LANDTYPE UNIT 14

Landtype unit 14 consists dominantly of Landtype 14 and minor amounts of Landtypes 15 and 26.

The major soil profile type found on this Landtype is number 1400. Soils on Landtype 14 are comprised of sandy loams and loamy sands which have surface layers totaling 8-16 inches (20-40 cm) in thickness, sub-soil layers 12-24 inches (30-60 cm) in thickness and contain 35-50 percent fine gravel. Soils are forming in stratified alluvium and glacial outwash and are excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock is highly variable but generally greater than 12 feet (4 m).

Typically, Landtype 14 is associated with valley train deposits of glaciofluvial origin at elevations ranging from 2500 to 4500 feet (760-1370 m) on slopes 0-15 percent. The slope stability class is I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 14-H

Landtype unit 14-H consists dominantly of Landtype 14-H and minor amounts of Landtypes 12-H, 15-H and 26-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370 and 1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 14.

## LANDTYPE UNIT 15

Landtype unit 15 consists dominantly of Landtype 15 and minor amounts of Landtypes 14, 26 and 27.

The major soil profile type found on this Landtype is number 1400. Soils on Landtype 15 are comprised of sandy loams and loamy sands which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 15-25 inches (40-65 cm) in thickness and contain 35-50 percent fine gravel. Soils are forming in stratified alluvium and glacial outwash and are excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock is highly variable but generally greater than 12 feet (4 m).

Typically, Landtype 15 is associated with dissection surfaces of valley train deposits of glaciofluvial origin at elevations ranging from 2500 to 4500 feet (760-1370 m) on slopes 15-50 percent. The slope stability class is Class I and II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 15-H

Landtype unit 15-H consists dominantly of Landtype 15-H and minor amounts of Landtypes 14-H, 26-H and 27-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370 and 1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 15.



## LANDTYPE UNIT 16

Landtype unit 16 consists dominantly of Landtype 16 and minor amounts of Landtypes 17-A, 20-A and 22.

The major soil profile type found on this Landtype is number 1600. Soils on Landtype 16 are comprised of sandy loams and loamy sands which have surface layers totaling 6-12 inches (15-30 cm) in thickness, sub-soil layers 70-90 inches (175-230 cm) in thickness and contain 35-50 percent gravel and cobble. Soils are forming in glacial outwash and are excessively drained.

Bedrock materials consist of hard to moderately hard andesites and basalts. Depth to bedrock ranges from 6 to 12 feet (2-4 m).

Typically Landtype 16 is associated with glaciofluvial deposits in hanging valleys and high elevation, ice carved basins at elevations ranging from 5000 to 7000 feet (1525-2135 m) on slopes 10 to 30%. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 17

Landtype unit 17 consists dominantly of Landtype 17 and minor amounts of Landtypes 3, 20 and 22.

The major soil profile type found on this Landtype is number 1700. Soils on Landtype 17 are comprised of sandy loams and loams which have surface layers totaling 6-10 inches (15-25 cm) in thickness, sub-soil layers 15-40 inches (40-100 cm) in thickness and contain 40-70 percent gravel and cobble. Soils are forming in glacial till deposits and are well drained.

Bedrock materials consist of hard to moderately hard andesites and basalts. Depth to bedrock 2 to 5 feet (.5-1.5 m).

Typically, Landtype 17 is associated with slightly convex surfaces on high elevation glacial pluck and scoured areas at elevations ranging from 5000 to 7000 feet (1525-2135 m) with slopes 15-45 percent. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 17-A

Landtype unit 17-A consists dominantly of Landtype 17-A and minor amounts of Landtypes 3, 16, 20-A and 22.

The major soil profile type found on this Landtype is number 2000. Soils on Landtype 17-A are comprised of sandy loams which have surface layers totaling 2-6 inches (5-15 cm) in thickness, sub-soil layers 15-30 inches (40-75 cm) in thickness and contain 35-50 percent gravel and cobble. Soils are forming in volcanic ash and glacial till deposits and are well drained.

Bedrock materials consist of hard to moderately hard andesites and basalts. Depth to bedrock ranges from 2 to 4 (.5-1 m) feet.

Typically, Landtype 17-A is associated with slightly convex surfaces on high elevation glacial pluck and scoured areas at elevations ranging from 5200 to 7000 feet (1585-2135 m) with slopes 15-45 percent. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 18

Landtype unit 18 consists dominantly of Landtype 18 and minor amounts of Landtypes 12, 14 and 19.

The major soil profile type found on this Landtype is number 1800. Soils on Landtype 18 are comprised of sandy loams and loamy sands which have surface layers totaling 12-18 inches (30-45 cm) in thickness, sub-soil layers 24-36 inches (60-90 cm) in thickness and contain 40-60 percent cobble and stone. Soils are forming in cobbly, stratified alluvium and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m).

Typically, Landtype 18 is associated with alluvial fans, stringers and terraces at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 10-20 percent. The slope stability class is Class I.

This Landtype occurs primarily in Pprincipal Forest Environments.

## LANDTYPE UNIT 18-H

Landtype unit 18-H consists dominantly of Landtype 18-H and minor amounts of Landtypes 12-H and 19-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370 and 1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 18.



## LANDTYPE UNIT 19

Landtype unit 19 consists dominantly of Landtype 19 and minor amounts of Landtypes 18, 23 and 39.

The major soil profile type found on this Landtype is number 1900. Soils on Landtype 19 are comprised of fine sandy loams and sandy loams which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 24-36 inches (60-90 cm) in thickness and contain 45-80 percent gravel, cobble and stone. Soils are forming in colluvium and alluvium and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 12 feet (4 m).

Typically, Landtype 19 is associated with colluvial-alluvial cones and toe slopes at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 20-45 percent. The slope stability class is Class II.

This Landtype occurs primarily in Pprincipal Forest Environments.

## LANDTYPE UNIT 19-H

Landtype unit 19-H consists dominantly of Landtype 19-H and minor amounts of Landtypes 18-H, 23 and 39-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370 and 1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 19.

## LANDTYPE UNIT 20

Landtype unit 20 consists dominantly of Landtype 20 and minor amounts of Landtypes 3, 12-H, 17 and 22.

The major soil profile type found on this Landtype is number 1700. Soils on Landtype 20 are comprised of sandy loams which have surface layers totaling 6-10 inches (15-25 cm) in thickness, sub-soil layers 15-40 inches (40-100 cm) in thickness and contain 15-35 percent gravel and cobble. Soils are forming in glacial till deposits and are moderately well drained.

Bedrock materials are comprised of hard to moderately hard andesites and basalts. Depth to bedrock 2 to 5 feet (.5-1.5 m) beneath compacted till layer.

Typically, Landtype 20 is associated with high elevation, broad glaciated basins and scoured basins with elevations ranging from 5000 to 6000 feet (1525-1980 m) on slopes 5-25 percent. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 20-A

Landtype unit 20-A consists dominantly of Landtype 20-A and minor amounts of Landtypes 3, 12-H, 16, 17-H and 22.

The major soil profile type found on this Landtype is number 2000. Soils on Landtype 20-A are comprised of sandy loams which have surface layers totaling 2-6 inches (5-15 cm) in thickness, sub-soil layers 15-24 inches (35-60 cm) in thickness and contain 35-60 percent gravel and cobble. Soils are forming in volcanic ash and glacial till deposits and are moderately well drained.

Bedrock materials are comprised of hard to moderately hard andesites and basalts. Depth to bedrock 2 to 4 feet (.5-1 m) beneath compacted till layer.

Typically, Landtype 20-A is associated with high elevation, broad glaciated basins and scoured lands with eolian volcanic ash deposits at elevations ranging from 5000 to 6500 feet (1525-1980 m) on slopes 5-25 percent. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 21

Landtype unit 21 consists dominantly of Landtype 21 and minor amounts of Landtypes 3, 10-H, 11-H and 17-A.

The major soil profile type found on this Landtype is number 2100. Soils on Landtype 21 are comprised of loams and sandy loams which have surface layers totaling 20-30 inches (25-75 cm) in thickness, sub-soil layers 40-50 inches (100-125 cm) in thickness and contain 60-80 percent boulders and stone. Soils are forming in unconsolidated glacial till debris and are well drained.

Bedrock materials comprised of soft to moderately hard andesites and basalts. Depth to bedrock 5 to 8 feet (1.5 - 2.5 m).

Typically, Landtype 21 is associated with long, smooth, slightly rounded side slopes at elevations ranging from 4500 to 6000 (1370-1830 m) on slopes 15-45 percent. The slope stability class is Class I.

This Landtype occurs primarily in Upper Forest Environments.



## LANDTYPE UNIT 22

Landtype unit 22 consists dominantly of Landtype 22 and minor amounts of Landtypes 3 and 39-H.

The major soil profile type found on this Landtype is number 2200. Soils on Landtype 22 are comprised of loams and sandy loams which have surface layers totaling 8-12 inches (20-30 cm) in thickness, sub-soil layers 40-60 inches (100-150 cm) in thickness and contain 50-70 percent cobble and stone. Soils are forming in glacial till and colluvium and are well drained.

Bedrock materials comprised of moderately hard to hard andesite and basalts. Depth to bedrock 8 to 12 feet (2.5-3.5 m).

Typically, Landtype 22 is associated with short, steep slopes on weakly expressed cirque walls and ice gouged surfaces at elevations ranging from 5000 to 7000 feet (1525-2135 m) on slopes 35-65 percent. The slope stability class is Class II.

This Landtype occurs primarily in Upper Forest and Sub-alpine Forest Environments.

## LANDTYPE UNIT 23

Landtype Unit 23 consists dominantly of Landtype 23 and minor amounts of Landtypes 3, 11, 11-H, 36-H and 39-H.

The major soil profile type found on this Landtype is number 1100. Soils on Landtype 23 are comprised of loams and sandy loams which have surface layers totaling 20-40 inches (50-100 cm) in thickness, sub-soil layers 30-40 inches (75-100 cm) in thickness and contain 35-75 percent gravel and cobble. Soils are forming in colluvium and glacial till and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock is generally greater than 8 feet (2.5 m) beneath compacted till.

Typically, Landtype 23 is associated with a thin veneer of compacted till on steep glacial trough walls at elevations ranging from 4000 to 5500 feet (1220-1675 m) on slopes 50-80 percent. Stability Class III and IV.

This Landtype occurs primarily in Upper Forest Environments but may extend into Principal Forest Environments along glacial troughs.

## LANDTYPE UNIT 24

Landtype unit 24 consists dominantly of Landtype 24 and minor amounts of Landtypes 3, 4, 6 and 25.

The major soils profile type found on this Landtype is number 2400. Soils on Landtype 24 are comprised of sandy loams which have surface layers totaling 8-14 inches (20-35 cm) in thickness, sub-soil layers 30-48 inches (75-120 cm) in thickness and contain 15-35 percent gravel. Soils are forming in cindery glaciaofluvial deposits and are excessively drained.

Bedrock materials hard to moderately hard recent basalt and scoria. Depth to bedrock variable but generally greater than 12 feet (4 m).

Typically, Landtype 24 is associated with sandy flats of glaciofluvial origin at elevations ranging from 3000 to 4000 feet (915-1220 m) on slopes 0-7 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 25

Landtype unit 25 consists dominantly of Landtype 25 and minor amounts of Landtypes 25-H, 24 and 4.

The major soils profile type found on this Landtype is number 2500. Soils on Landtype 25 are comprised of sandy loams which have surface layer totaling 6-12 inches (15-30 cm) in thickness, sub-soil layers 30-48 inches (75-120 cm) in thickness and contain 40-70 percent cobble and stone. Soils are forming in scoriaceous volcanic ejecta and are excessively drained.

Bedrock materials are loose, broken and highly fractured cinders and scoria. Depth to bedrock ranges from 8 to 12+ feet (2.5-4 m).

Typically, Landtype 25 is associated with lower slopes of cinder cones and recent volcanoes at elevations ranging from 3500 to 4500 feet (1065-1370 m) on slopes 10-25 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 25-H

Landtype unit 25-H consists dominantly of Landtype 25-H and minor amounts of Landtypes 25, 24 and 4.

This Landtype is found at elevations between 4500 and 5500 feet (1370-1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 25.



## LANDTYPE UNIT 26

Landtype unit 26 consists dominantly of Landtype 26 and minor amounts of Landtypes 14, 18 and 27.

The major soils profile type found on this Landtype is number 2600. Soils on Landtype 26 are comprised of sandy loams and loamy sands which have surface layers totaling 5-10 inches (10-25 cm) in thickness, sub-soil layers 20-40 inches (50-100 cm) in thickness and contain 25-50 percent gravel and cobble. Soils are forming in flow pumice (glowing avalanche) and alluvial deposits and are excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock is greater than 12 feet (4 m).

Typically, Landtype 26 is associated with broad flats and gently sloping surfaces originating from Mazama volcanic eruption at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 5-20%. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 26-H

Landtype unit 26-H consists dominantly of Landtype 26-H, and minor amounts of Landtypes 14-H and 18-H.

This Landtype is found at elevations between 4500 and 6000 feet (1370-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 26.

## LANDTYPE UNIT 27

Landtype unit 27 consists dominantly of Landtype 27 and minor amounts of Landtypes 0, 15, 19 and 26.

The major soils profile type found on this Landtype is number 2600. Soils on Landtype 27 are comprised of sandy loams which have surface layers totaling 8-15 inches (20-40 cm) in thickness, sub-soil layers 20-40 inches (50-100 cm) in thickness and contain 25-50 percent gravel and cobble. Soils are forming in flow pumice and alluvial deposits and are excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock is greater than 12 feet (4 m).

Typically, Landtype 27 is associated with moderately steep surfaces occurring on dissections in flat, flow pumice deposits of post-glacial origin at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 20-55 percent. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 27-H

Landtype unit 27-H consists dominantly of Landtype 27-H and minor amounts of Landtypes 0, 15-H, 19-H and 26-H.

This Landtype is found at elevations between 4500 and 6000 feet (1370-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 27.

## LANDTYPE UNIT 30

Landtype unit 30 consists dominantly of Landtype 30 and minor amounts of Landtypes 31, 32 and 33.

The major soils profile type found on this Landtype is number 3000. Soils on Landtype 30 are comprised of sandy loams over clay loams which have surface layers totaling 15-30 inches (40-75 cm) in thickness, sub-soil layers 40-60 inches (100-150 cm) in thickness and contain 20-35 percent gravel and cobble. Soils are forming in residuum with a surface layer of volcanic ash and are well to excessively drained.

Bedrock materials are comprised of soft to moderately hard andesites and basalts. Depth to bedrock ranges from 4 to 8 feet (1-2.5 m).

Typically, Landtype 30 is associated with broad, elevated flats at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 0-15 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 31

Landtype unit 31 consists dominantly of Landtype 31 and minor amounts of Landtypes 12, 30, 33 and 34.

The major soils profile type found on this Landtype is number 3100. Soils on Landtype 31 are conprised of loams and clay loams which have surface layers totaling 15-20 inches (40-50 cm) in thickness, sub-soil layers 40-60 inches (100-150 cm) in thickness and contain 25-50 percent gravel. Soils are forming in residuum and are well drained.

Bedrock materials are comprised of soft to moderately hard basalts and andesites. Depth to bedrock ranges from 5 to 7 feet (1.5-2 m).

Typically, Landtype 31 is associated with long, smooth ridgetops and gentle non-dissected hill slopes at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 10-35%. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.



## LANDTYPE UNIT 31-H

Landtype unit 31-H consists dominantly of Landtype 31-H and minor amounts of Landtypes 12-H, 33-H and 34-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370-1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 31.

## LANDTYPE UNIT 32

Landtype unit 32 consists dominantly of Landtype 32 and minor amounts of Landtypes 35, 36, 39 and 42.

The major soils profile type found on this Landtype is number 3100. Soils on Landtype 32 are comprised of loams and clay loams which have surface layers totaling 15-20 inches (40-100 cm) in thickness, sub-soil layers 40-60 inches (100-150 cm) in thickness and contain 25-50 percent gravel and cobble. Soils are forming in residuum and colluvium and are well drained.

Bedrock materials are comprised of soft to moderately hard basalt and andesite and some breccia. Depth to bedrock ranges from 5 to 7 feet (1.5-2 m).

Typically, Landtype 32 is associated with steep stream dissection slopes at elevations ranging from 3000 to 4500 feet (915-1370 m) on slopes 35-65%. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 32-H

Landtype unit 32-H consists dominantly of Landtype 32-H and minor amounts of Landtypes 23, 35-H, 36-H, 39-H and 42-H.

This Landtype is found at elevations between 4500 and 5500 feet (1370-1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 32.

## LANDTYPE UNIT 33

Landtype unit 33 consists dominantly of Landtype 33 and minor amounts of Landtypes 30, 31, 34, 37 and 40.

The major soils profile type found on this Landtype is number 3300. Soils on Landtype 33 are comprised of loams and light clay loams which have surface layers totaling 20-30 inches (50-75 cm) in thickness, sub-soil layers 30-50 inches (75-120 cm) in thickness and contain 25-60 percent cobble. Soils are forming in residuum and colluvium and are well drained.

Bedrock materials are comprised of soft to moderately hard andesites, basalts and breccias. Depth to bedrock ranges from 6 to 8 feet (2-2.5 m).

Typically, Landtype 33 is associated with gently rolling broad surfaces exhibiting considerably variable micro-relief at elevations ranging from 3500 to 5000 feet (1065-1525 m) on slopes 5-25 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 33-H

Landtype unit 33-H consists dominantly of Landtype 33-H and minor amounts of Landtypes 31-H, 34-H and 37.

This Landtype is found at elevations between 5000 and 5500 feet (1525-1675 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 33.

## LANDTYPE UNIT 34

Landtype unit 34 consists dominantly of Landtype 34 and minor amounts of Landtype 35.

The major soils profile type found on this Landtype is number 3400. Soils on Landtype 34 are comprised of loams which have surface layers totaling 15-25 inches (40-65 cm) in thickness, sub-soil layers 15-25 inches (40-65 cm) in thickness and contain 25-40 percent gravel and cobble. Soils are forming in residuum and are well drained.

Bedrock materials are comprised of soft andesites and basalts. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 34 is associated with smooth, rounded, non-glaciated hill slopes at elevations ranging from 3500 to 5000 feet (1065-1525 m) on slopes 5-35 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.



## LANDTYPE UNIT 34-H

Landtype unit 34-H consists dominantly of Landtype 34-H and minor amounts of Landtypes 31-H, 35-H and 37.

This Landtype is found at elevations between 5000 and 6000 feet (1525-1825 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 24.

## LANDTYPE UNIT 35

Landtype unit 35 consists dominantly of Landtype 35 and minor amounts of Landtypes 3 and 34.

The major soil profile type found on this Landtype is number 3400. Soils on Landtype 35 are comprised of loams which have surface layers totaling 15-25 inches (40-65 cm) in thickness, sub-soil layers 15-25 inches (40-65 cm) in thickness and contain 25-40 percent gravel and cobble. Soils are forming in residuum and colluvium and are well drained.

Bedrock materials are comprised of soft andesites and basalts. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 35 is associated with smooth, rounded, non-glaciated hill slopes which are moderately steep and occur at elevations ranging from 3500 to 5000 feet (1065-1525 m) on slopes 35-50 percent. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 35-H

Landtype unit 35-H consists dominantly of Landtype 35-H and minor amounts of landtypes 3, 21, 34-H and 36-H.

This Landtype is found at elevations between 5000 and 6200 feet (1525 -1890 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 35.

## LANDTYPE UNIT 36

Landtype unit 36 consists dominantly of Landtype 36 and minor amounts of Landtypes 3, 23, 32 and 39.

The major soil profile type found on this Landtype is number 3600. Soils on Landtype 36 are comprised of loams which have surface layers totaling 6-12 inches (15-30 cm) in thickness, sub-soil layers 15-30 inches (40-75 cm) in thickness and contain 50-70 percent cobbles and stone. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of hard andesites and basalts. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 36 is associated with steep, upper slopes on glacial trough walls at elevations ranging from 3500 to 4500 feet (1065-1370 m) on slopes 50-80 percent. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 36-H

Landtype unit 36-H consists dominantly of Landtype 36-H and minor amounts of Landtypes 3, 23 and 39-H.

This Landtype is found at elevations between 4500 and 6000 feet (1370-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 36.

## LANDTYPE UNIT 37

Landtype unit 37 consists dominantly of Landtype 37 and minor amounts of Landtypes 31, 33 and 34.

The major soil profile type found on this Landtype is number 3400. Soils on Landtype 37 are comprised of loams and clay loams which have surface layers totaling 15-25 inches (40-65 cm) in thickness, sub-soil layers 15-25 inches (40-65 cm) in thickness and contain 15-35 percent gravel and cobble. Soils are forming in residuum and are moderately well drained.

Bedrock materials are comprised of soft to moderately hard andesites, basalts and breccia. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 37 is associated with slight depressional, water collection areas on broad non-glaciated flats at elevations ranging from 4000 to 5500 feet (1220-1675 m) on slopes 0-7%. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments, but frequently extends gradually into Upper Forest Environments.



## LANDTYPE UNIT 38

Landtype unit 38 consists dominantly of landtype 38 and minor amounts of Landtypes 3, 4 and 25.

The major soil profile type found on the Landtype is number 3800. Soils on Landtype 38 are comprised of sandy loams which have surface layers totaling 6-12 inches (15-30 cm) in thickness, sub-soil layers 30-50 inches (75-120 cm) in thickness and contain 50-75 percent gravel and cobble. Soils are forming in volcanic ejecta and are excessively drained.

Bedrock materials are comprised of highly vesiculated basalts and cinders. Depth to bedrock is generally greater than 12 feet (4 m).

Typically, Landtype 38 is associated with gentle to moderately steep, smooth slopes associated with cinder cones at elevations ranging from 3500 to 5000 feet (1065-1525 m) on slopes 25-55 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 39

Landtype unit 39 consists dominantly of Landtype 39 and minor amounts of Landtypes 23, 32, 36, 42 and 43.

The major soil profile type found on this landtype is number 3900. Soils on Landtype 39 are comprised of loams and sandy loams which have surface layers totaling 15-25 inches (40-65 cm) in thickness, sub-soil layers 30-60 inches (75-150 cm) in thickness and contain 45-80 percent cobble and stone. Soils are forming in talus and colluvium and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock ranges from 6 to 12 feet (2-4 m).

Typically, Landtype 39 is associated with steep, middle and lower slopes on glacial trough walls at elevations ranging from 2500 to 4500 feet (760-1370 m) on slopes 45-80 percent. Stability Class II and III.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 39-H

Landtype unit 39-H consists dominantly of Landtype 39-H and minor amounts of Landtypes 23 and 36-H.

This Landtype is found at elevations between 4500 and 6000 feet (1370-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 39.

## LANDTYPE UNIT 40

Landtype unit 40 consists dominantly of Landtype 40 and minor amounts of Landtypes 9, 33 and 41.

The major soil profile type found on this Landtype is number 4000. Soils on Landtype 40 are comprised of clay loams, silty clay loams and clays which have surface layers totaling 10-15 inches (25-40 cm) in thickness sub-soil layers 20-30 inches (50-75 cm) in thickness and contain 10-35 percent gravel and cobble. Soils are forming in residuum and slump deposits and are somewhat poorly drained.

Bedrock materials are comprised of saprolytic to soft tuffs, breccias and various other western cascades pyroclastics. Depth to bedrock ranges from 3 to 5 feet (1-1.5 m).

Typically, Landtype 40 is associated with slump basin positions in non-glaciated western cascades at elevations ranging from 3000 to 5000 feet (915-1525 m) on slopes 5-20 percent. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 40-H

Landtype unit 40-H consists dominantly of Landtype 40-H and minor amounts of Landtypes 9, 33-H and 41-H.

This Landtype is found at elevations between 5000 and 6000 feet (1525-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 40.

## LANDTYPE UNIT 41

Landtype unit 41 consists dominantly of Landtype 41 and minor amounts of Landtypes 31, 33, 40 and 42.

The major soil profile type found on this Landtype is number 4200. Soils on Landtype 41 are comprised of loams and clay loams which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 20-40 inches (50-100 cm) in thickness and contain 25-40 percent gravel and cobble. Soils are forming in residuum and are well drained.

Bedrock materials are comprised of soft to moderately hard tuffs, breccia, and hard basalts and andesites. Depth to bedrock ranges from 2 to 5 feet (.5-1.5 m).

Typically, Landtype 41 is associated with gently sloping ridgetops and side slopes in non-glaciated western cascades at elevations ranging from 2500 to 4500 feet (760-1370 m) on slopes 10-40 percent. Stability Class I.

This Landtype occurs primarily in Principal Forest Environments.



## LANDTYPE UNIT 41-H

Landtype unit 41-H consists dominantly of landtype 41-H and minor amounts of Landtypes 33-H, 40-H and 42-H,

This Landtype is found at elevations between 4500 and 6000 feet (1370-1828 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 41.

## LANDTYPE UNIT 42

Landtype unit 42 consists dominantly of Landtype 42 and minor amounts of Landtypes 9, 41 and 43.

The major soil profile type found on this Landtype is number 4200. Soils on Landtype 42 are comprised of loams and clay loams which have surface layers totaling 10-20 inches (25-50 cm) in thickness, sub-soil layers 20-40 inches (50-100 cm) in thickness and contain 30-50 percent gravel and cobble. Soils are forming in colluvium and residuum and are well drained.

Bedrock materials are comprised of soft to moderately hard tuffs, breccia and hard basalts and andesites. Depth to bedrock ranges from 3 to 6 feet (1-2 m).

Typically, Landtype 42 is associated with moderately steep to steep, convex lower slopes along stream dissections in non-glaciated western cascades at elevations ranging from 2000 to 4000 feet (610-1220) on slopes 40-70 percent. Stability Class III.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 42-H

Landtype unit 42-H consists dominantly of Landtype 42-H and minor amounts of Landtype 9, 41-H and 43-H.

This Landtype is found at elevations between 4000 and 6000 feet (1220 and 1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 42.

## LANDTYPE UNIT 43

Landtype unit 43 consists dominantly of Landtype 43 and minor amounts of Landtypes 3, 9, 36, 41 and 42.

The major soil profile type found on this Landtype is number 4300. Soils on Landtype 43 are comprised of loams and clay loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, sub-soil layers 10-25 inches (25-50 cm) in thickness and contain 35-45 percent gravel and cobble. Soils are forming in residuum and colluvium and are well drained.

Bedrock materials are comprised of soft to moderately hard tuffs, breccias and hard basalts and andesites. Depth to bedrock ranges from 1 to 3 feet (.5-1 m).

Typically, Landtype 43 is associated with moderately steep to steep, convex, upper side slopes and ridges along stream dissections in non-glaciated western cascades at elevations ranging from 2000 to 4000 feet (610-1220 m) on slopes 40-70 percent. Stability Class III.

This Landtype occurs primarily in Principal Forest Environments.

## LANDTYPE UNIT 43-H

Landtype unit 43-H consists dominantly of Landtype 43-H and minor amounts of Landtypes 3, 9, 36-H, 41-H and 42-H.

This Landtype is found at elevations between 4000 and 6000 feet (1220-1830 m) in an Upper Forest Environment. In most other respects, it is very similar to Landtype 43.

## LANDTYPE UNIT 46

Landtype unit 46 consists dominantly of Landtype 46 and minor amounts of Landtypes 19, 42 and 43.

The major soil profile type found on this Landtype is number 4600. Soils on Landtype 46 are comprised of loams and sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, sub-soil layers 25-40 inches (65-100 cm) in thickness and contain 35-50 percent gravel. Soils are forming in residuum and colluvium and are well to excessively drained.

Bedrock materials are comprised of coarse crystaline mafic intrusive rocks, variable hardness. Depth to bedrock ranges from 3 to 5 feet (1-1.5 m).

Typically, Landtype 46 is associated with short, moderately steep, dissected slopes in non-glaciated western cascades at elevations ranging from 3500 to 4500 feet (1065-1370 m) on slopes 25-50 percent. Stability Class II.

This Landtype occurs primarily in Principal Forest Environments.



## LIST OF LANDTYPE UNITS AND COMPLEXES MAPPED IN THE CASCADE MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS | | | | | | | | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|---|---|
| | % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | | | | |
| 0 | | | | | | | | | 2,154 | 872 |
| 1 | | | | | | | | | 734 | 297 |
| 3 | | | | | | | | | 9,640 | 390 |
| 4 | | | | | | | | | 6,779 | 2,745 |
| 5 | | | | | | | | | 8,750 | 3,544 |
| 6 | | | | | | | | | 5,476 | 2,218 |
| 7 | | | | | | | | | 1,720 | 697 |
| 8 | | | | | | | | | 1,250 | 506 |
| 9 | | | | | | | | | 7,796 | 3,157 |
| 10 | | | | | | | | | 892 | 361 |
| 10-H | | | | | | | | | 4,269 | 1,729 |
| 11 | | | | | | | | | 3,593 | 1,455 |
| 11-H | | | | | | | | | 9,266 | 3,753 |
| 12 | | | | | | | | | 10,826 | 4,385 |
| 12-H | | | | | | | | | 6,143 | 2,488 |
| 13 | | | | | | | | | 1,938 | 380 |
| 13-H | | | | | | | | | 795 | 322 |
| 14 | | | | | | | | | 10,820 | 4,382 |
| 14-H | | | | | | | | | 272 | 110 |
| 15 | | | | | | | | | 193 | 78 |
| 16 | | | | | | | | | 2,401 | 971 |
| 17 | | | | | | | | | 1,037 | 420 |
| 17-A | | | | | | | | | 1,491 | 604 |
| 18 | | | | | | | | | 199 | 81 |
| 18-H | | | | | | | | | * | * |
| 19 | | | | | | | | | 434 | 176 |
| 19-H | | | | | | | | | * | * |
| 20 | | | | | | | | | 4,355 | 1,764 |
| 20-A | | | | | | | | | 7,147 | 2,895 |
| 21 | | | | | | | | | 2,316 | 938 |
| 22 | | | | | | | | | 4,539 | 1,838 |
| 23 | | | | | | | | | * | * |
| 24 | | | | | | | | | 1,499 | 607 |
| 25 | | | | | | | | | 10,445 | 4,230 |
| 25-H | | | | | | | | | * | * |
| 26 | | | | | | | | | 16,165 | 6,547 |
| 26-H | | | | | | | | | 19,258 | 7,800 |
| 27 | | | | | | | | | * | * |
| 27-H | | | | | | | | | * | * |
| 30 | | | | | | | | | 7,464 | 3,023 |
| 31 | | | | | | | | | 12,117 | 4,907 |
| 31-H | | | | | | | | | 3,708 | 1,502 |
| 32 | | | | | | | | | 7,430 | 3,009 |
| 33 | | | | | | | | | 28,215 | 11,427 |
| 33-H | | | | | | | | | 1,224 | 496 |

LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE CASCADE MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| 34 | | | | | | | 27,956 | 11,322 |
| 34-H | | | | | | | 115 | 47 |
| 35 | | | | | | | 7,151 | 2,896 |
| 35-H | | | | | | | 350 | 142 |
| 36 | | | | | | | * | * |
| 36-H | | | | | | | 214 | 87 |
| 37 | | | | | | | 4,957 | 2,008 |
| 38 | | | | | | | 1,232 | 499 |
| 39 | | | | | | | * | * |
| 39-H | | | | | | | 99 | 40 |
| 40 | | | | | | | 2,835 | 1,148 |
| 40-H | | | | | | | 1,257 | 509 |
| 41 | | | | | | | 8,806 | 3,566 |
| 41-H | | | | | | | 2,496 | 1,011 |
| 42 | | | | | | | 4,228 | 1,712 |
| 42-H | | | | | | | 823 | 333 |
| 43 | | | | | | | * | * |
| 43-H | | | | | | | * | * |
| 46 | | | | | | | 774 | 313 |
| COMPLEXES | | | | | | | | |
| 110-H | 70% | 11-H | 30% | 10-H | | | 615 | 249 |
| 112 | 60% | 11 | 40% | 12 | | | 638 | 258 |
| 113-H | 70% | 11-H | 30% | 3 | | | 747 | 303 |
| 120 | 60% | 12-H | 40% | 20 | | | 41 | 17 |
| 123 | 65% | 12 | 35% | 13 | | | 503 | 204 |
| 123-H | 65% | 12-H | 45% | 13-H | | | 314 | 127 |
| 132 | 55% | 13 | 45% | 12 | | | 679 | 275 |
| 132-H | 55% | 13-H | 45% | 12-H | | | 414 | 168 |
| 133 | 50% | 11 | 50% | 33 | | | 709 | 287 |
| 145 | 70% | 14 | 30% | 15 | | | 2,104 | 852 |
| 145-H | 70% | 14-H | 30% | 15-H | | | 217 | 88 |
| 167-A | 50% | 16 | 50% | 17-A | | | 8,376 | 3,393 |
| 170 | 50% | 17 | 50% | 20 | | | 975 | 395 |
| 171 | 60% | 17 | 40% | 21 | | | 609 | 247 |
| 172 | 60% | 17 | 40% | 22 | | | 479 | 194 |
| 173 | 65% | 17 | 35% | 3 | | | 5,238 | 2,121 |
| 173-A | 65% | 17-A | 35% | 3 | | | 8,278 | 3,353 |
| 174-A | 65% | 18-A | 35% | 4 | | | 961 | 389 |
| 198 | 55% | 19 | 45% | 18 | | | 2,141 | 867 |
| 198-H | 55% | 19-H | 45% | 18-H | | | 771 | 312 |
| 202 | 60% | 20 | 40% | 12-H | | | 2,721 | 1,102 |
| 203 | 70% | 20 | 30% | 3 | | | 515 | 209 |
| 203-A | 70% | 20-A | 30% | 3 | | | 1,097 | 444 |
| 204-H | 35% | 26-H | 35% | 0 1/ | | | 432 | 175 |



LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE CASCADE MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| 207-A | 50% | 20-A | 50% | 17-A | | | 483 | 196 |
| 223 | 65% | 22 | 35% | 3 | | | 878 | 356 |
| 227-A | 60% | 22 | 40% | 17-A | | | 1,554 | 629 |
| 236 | 60% | 23 | 40% | 36 | | | 2,237 | 906 |
| 236-H | 60% | 23 | 40% | 36-H | | | 5,387 | 2,182 |
| 239 | 60% | 23 | 40% | 39 | | | 1,454 | 589 |
| 254 | 70% | 25 | 30% | 4 | | | 427 | 173 |
| 254-H | 70% | 25-H | 30% | 4 | | | 6,088 | 2,466 |
| 260-H | 65% | 26-H | 35% | 0 1/ | | | 1,582 | 641 |
| 264 | 50% | 26 | 50% | 14 | | | 6,870 | 2,782 |
| 264-H | 50% | 26-H | 50% | 14-H | | | 165 | 67 |
| 267 | 60% | 26 | 40% | 27 | | | 1,706 | 691 |
| 270 | 50% | 27 | 50% | 0 1/ | | | 2,473 | 1,002 |
| 270-H | 50% | 27-H | 50% | 0 1/ | | | 1,322 | 535 |
| 301 | 60% | 30 | 40% | 31 | | | 459 | 187 |
| 310-H | 35% | 21 | 35% | 10-H | 30% | 3 | 3,274 | 1,326 |
| 312-H | 50% | 33-H | 50% | 12-H | | | 365 | 148 |
| 313 | 50% | 31 | 50% | 32 | | | 1,177 | 477 |
| 314 | 50% | 31 | 50% | 34 | | | 446 | 181 |
| 317-A | 50% | 3 1/ | 50% | 17-A | | | 3,042 | 1,232 |
| 325 | 60% | 32 | 40% | 35 | | | 1,302 | 527 |
| 326 | 60% | 32 | 40% | 36 | | | 2,163 | 876 |
| 326-H | 60% | 32-H | 40% | 36-H | | | 230 | 93 |
| 329 | 60% | 32 | 40% | 39 | | | 4,727 | 1,912 |
| 332 | 70% | 33 | 30% | 32 | | | 567 | 230 |
| 336 | 70% | 36 | 30% | 3 | | | 1,137 | 460 |
| 336-H | 70% | 36-H | 30% | 3 | | | 1,172 | 475 |
| 339 | 50% | 33 | 50% | 9 1/ | | | 1,233 | 499 |
| 361-H | 50% | 36-H | 50% | 11-H | | | 1,264 | 512 |
| 366-H | 35% | 36-H | 40% | 39-H | 25% | 6 | 263 | 107 |
| 369 | 60% | 36 | 40% | 39 | | | 1,038 | 420 |
| 369-H | 60% | 36-H | 40% | 39-H | | | 2,526 | 1,023 |
| 393-H | 70% | 39-H | 30% | 3 | | | 378 | 153 |
| 396-H | 60% | 39-H | 40% | 36-H | | | 801 | 324 |
| 402 | 70% | 40 | 30% | 42 | | | 422 | 171 |
| 403 | 60% | 40 | 40% | 33 | | | 1,298 | 526 |
| 403-H | 60% | 40-H | 40% | 33-H | | | 398 | 161 |
| 409 | 50% | 40 | 50% | 9 1/ | | | 373 | 151 |
| 412 | 60% | 41 | 40$ | 42 | | | 3,250 | 1,316 |
| 412-H | 60% | 41-H | 40% | 42-H | | | 413 | 167 |
| 413 | 60% | 41 | 40% | 33 | | | 3,655 | 1,480 |

LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE CASCADE MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS | | | | | | | | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|---|---|
| | % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | | |
| 413-H | 60% | 41-H | 40% | 33-H | | | | | 164 | 66 |
| 416-H | 70% | 41-H | 30% | 6 | | | | | 114 | 46 |
| 421 | 60% | 42 | 40% | 41 | | | | | 3,623 | 1,467 |
| 422-H | 60% | 42-H | 40% | 23 | | | | | 732 | 296 |
| 423 | 60% | 42 | 40% | 33 | | | | | 1,202 | 487 |
| 423-H | 60% | 42-H | 40% | 33-H | | | | | 205 | 83 |
| 424 | 60% | 42 | 40% | 43 | | | | | 14,921 | 6,043 |
| 424-H | 60% | 42-H | 40% | 43-H | | | | | 4,790 | 1,940 |
| 426 | 60% | 42 | 40% | 46 | | | | | 1,480 | 601 |
| 429 | 60% | 42 | 40% | 39 | | | | | 8,043 | 3,257 |
| 429-H | 60% | 42-H | 40% | 39-H | | | | | 175 | 71 |
| 432 | 50% | 43 | 50% | 32 | | | | | 1,168 | 473 |
| 433-H | 70% | 43-H | 30% | 3 | | | | | 821 | 333 |
| 439 | 50% | 43 | 50% | 39 | | | | | 631 | 256 |
| 439-H | 50% | 43-H | 50% | 39-H | | | | | 677 | 274 |
| 463 | 60% | 43 | 40% | 39 | | | | | 267 | 108 |
| 492 | 60% | 42 | 40% | 9 1/ | | | | | 33 | 13 |
| 499 | 60% | 43 | 40% | 9 1/ | | | | | 52 | 21 |
| Water | | | | | | | | | 715 | 290 |

* These Landtypes are mapped only in complex with other Landtype units.

1/ This component may severely limit management activity on entire Landtype complex.



TABLES OF INTERPRETATION

PERTAINING TO LANDTYPE UNITS

IN THE

CASCADE MOUNTAINS

PORTION OF THE

ROGUE RIVER NATIONAL FOREST

TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NO. | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|
| 0 | Very unstable | Slough & ravel | Greatly increased | Very severe | A | High | Sand |
| 1 | Very stable | N/A | None | --- | --- | --- | --- |
| 3 | Not rated | --- | --- | --- | --- | --- | --- |
| 4 | Not rated | --- | --- | --- | --- | --- | --- |
| 5 | Stable to unstable | Slough, ravel slump & channel scour, & debris avalanche | Greatly increased | Very severe | --- | High | Mixed |
| 6 | Not rated | --- | --- | --- | --- | --- | --- |
| 7 | Not rated | --- | --- | --- | --- | --- | --- |
| 8 | Not rated | --- | --- | --- | --- | --- | --- |
| 9 | Stable to unstable | Slump, channel scour, & debris slides | Greatly increased | Very severe | --- | High | Clay, silt |
| 10 | Very stable | N/A | None | Very slight | A & B | Low | Sand, silt |
| 10-H | Very stable | N/A | None | Very slight | A & B | Low | Sand, silt |
| 11 | Very stable | N/A | None | Slight | A | Low | Sand, silt |
| 11-H | Very stable | N/A | None | Slight | A | Low | Sand, silt |
| 12 | Very stable | N/A | None | Very slight | A | Low | Silt, sand |
| 12-H | Very stable | N/A | None | Very slight | A | Low | Silt, sand |
| 13 | Very stable | N/A | None | Slight | B | Low | Silt, sand |
| 13-H | Very stable | N/A | None | Slight | B | Low | Silt, sand |
| 14 | Very stable | N/A | None | Very slight | A | Low | Sand |
| 14-H | Very stable | N/A | None | Very slight | A | Low | Sand |
| 15 | Stable | Some ravel | Increased | Very slight | A | Low | Sand |
| 15-H | Stable | Some ravel | Increased | Very slight | A | Low | Sand |
| 16 | Very stable | N/A | None | Very slight | A | Low | Sand |
| 17 | Very stable | N/A | None | Slight | A | Low | Sand, silt |

TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NO. | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|
| 17-A | Very stable | N/A | None | Slight to moderate | A | Low to Moderate | Silt, sand |
| 18 | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 18-H | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 19 | Stable | Some ravel & channel scour | Increased | Slight | A | Low | Sand, silt |
| 19-H | Stable | Some ravel & channel scour | Increased | Slight | A | Low | Sand, silt |
| 20 | Very stable | N/A | None | Slight | A & B | Low | Sand, silt |
| 20-A | Very stable | N/A | None | Slight | A & B | Low | Silt, sand |
| 21 | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 22 | Stable | Some ravel & channel scour | Increased | Slight to moderate | A | Low | Silt, sand |
| 23 | Moderately stable to unstable | Debris avalanches | Increased | Moderate | A | Moderate | Silt, sand |
| 24 | Very stable | N/A | None | Very slight | A | Low | Sand |
| 25 | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 25-H | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 26 | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 26-H | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 27 | Stable | Some ravel & piping failures | Increased | Moderate | A | Moderate | Sand, silt |
| 27-H | Stable | Some ravel & piping failures | Increased | Moderate | A | Moderate | Sand, silt |
| 30 | Very stable | N/A | None | Very slight | A & B | Low | Sand, silt |
| 31 | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 31-H | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 32 | Stable | Occasional small slumps & channel scour | Increased | Moderate | B | Moderate | Silt, clay |
| 32-H | Stable | Occasional small slumps & channel scour | Increased | Moderate | B | Moderate | Silt, clay |



TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NO. | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|
| 33 | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 33-H | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 34 | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 34-H | Very stable | N/A | None | Slight | B | Low | Silt, clay |
| 35 | Stable | Occasional small slump & channel scour | Increased | Moderate | B | Moderate | Silt, clay |
| 35-H | Stable | Occasional small slump & channel scour | Increased | Moderate | B | Moderate | Silt, clay |
| 36 | Stable | Ravel & rock fall | Increased | Moderate | B | Moderate | Sand, silt |
| 36-H | Stable | Ravel & rock fall | Increased | Moderate | B | High | Sand, silt |
| 37 | Very stable | N/A | None | Very slight | C | Low | Silt, clay |
| 38 | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 39 | Stable to Moderately stable | Ravel & occasional debris slide | Increased | Moderate | A | Moderate | Sand, silt |
| 39-H | Stable to Moderately stable | Ravel & occasional debris slide | Increased | Moderate | A | Moderate | Sand, silt |
| 40 | Stable | Small slumps | Increased to Greatly increased | Moderate | D | Moderate | Clay, silt |
| 40-H | Stable | Small slumps | Increased to Greatly increased | Moderate | D | Moderate | Clay, silt |
| 41 | Very stable | N/A | None | Moderate | B | Low | Silt, clay |
| 41-H | Very stable | N/A | None | Moderate | B | Low | Silt, clay |
| 42 | Moderately stable | Slumps, debris slides & channel scour | Greatly increased | High | B | Moderate | Silt, clay |
| 42-H | Moderately stable | Slumps, debris slides & channel scour | Greatly increased | High | B | High | Silt, clay |
| 43 | Moderately stable | Slumps, debris slides & channel scour | Greatly increased | High | B | High | Silt, clay |
| 43-H | Moderately stable | Slumps, debris slides & channel scour | Greatly increased | High | B | High | Silt, clay |
| 46 | Stable | Channel scour | Increased | High | A | High | Sand, silt |

TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILTER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Unsuited | Shallow, stoney soils. Low growth potential. Moderately steep. | N/A | N/A | N/A | N/A | Poor | Shallow, stoney soils. | Water bar | N/A | N/A |
| 10-H | Unsuited | Shallow, stoney soils. Low growth potential. Moderately steep. (1) | N/A | N/A | N/A | N/A | Poor | Shallow, stoney soils. | Water bar | N/A | N/A |
| 11 | Moderate | Stoney soils, moderately steep in places. | None | Low | Moderate | Low | Well | Stoney soils. | Water bar | Moderate (2) | Unsuited, locally suited. (2) (6) |
| 11-H | Poor/moderate | Stoney soils, moderately steep in places. (1) | None | Moderate to high | Moderate | Low | Well | Stoney soils. | Water bar | Moderate (2) | Unsuited, locally suited. (2) (6) |
| 12 | Well | N/A | None | Moderate | Moderate | Low to moderate | Well | None | None | Well | Locally suited. (6) |
| 12-H | Moderate/poor | (1) | None | Moderate to high | Moderate | Low to moderate | Well | None | None | Well | Locally suited. (6) |
| 13 | Moderate | High water table. | Provide drainage where possible. | Moderate to high | Low | Moderate | Well | Some wet areas. | Water bar & avoid wet areas. | Poor (4) | Unsuited (4) (6) |
| 13-H | Poor | High water table. (1) | Provide drainage where possible. | High | Low | Moderate | Well | Some wet areas. | Water bar & avoid wet areas. | Poor (4) | Unsuited (4) (6) |
| 14 | Well | Dustiness, locally shallow to bedrock, droughty soils. | None | Moderate | High | Low | Well | None | None | Well (5) | Suited |
| 14-H | Moderate | Dustiness, locally shallow soils, droughtiness. (1) | None | High | High | Low | Well | None | None | Well (5) | Suited |
| 15 | Unsuited | High ravel potential, steep. | N/A | N/A | N/A | N/A | Poor | High ravel potential, steep. | Retaining structures to control ravel. | N/A | N/A |
| 15-H | Unsuited | High ravel potential, steep. (1) | N/A | N/A | N/A | N/A | Poor | High ravel potential, steep. | Retaining structures to control ravel. | N/A | N/A |
| 16 | Moderate | (1) | None | Moderate to high | High | Low | Well | None | Water bar | Moderate (2) | Locally suited (2) |
| 17 | Poor | High elevation, extremely adverse growth conditions, moderately steep & rocky soils. | None | Moderate to high | Moderate | Low | Moderate | Steep & rocky in places. | Water bar | Poor (2) (3) | Unsuited (2) (6) |
| 17-A | Unsuited/poor | High elevation, extremely adverse growth conditions, moderately steep & rocky soils. | None | High | High | Low | Moderate | Steep & rocky in places. | Water bar | Poor (2) (3) | Unsuited (2) (6) |
| 18 | Moderate/well | Stoney soils in places. | None | Low to moderate | Moderate | Low | High | None | None | Moderate (5) | Suited |
| 18-H | Moderate | Stoney soils in places, slight flood hazard. (1) | None | Moderate | Moderate | Low | High | None | None | Moderate (5) | Suited |
| 19 | Poor | Steep, stoney soils. | None | Moderate | Low | Low | High | Soils may be stoney & steep. | Water bar | Poor (2) | Unsuited (2) |

NOTE: Miscellaneous landtypes are not rated for recreation due to their high variability. Generally, miscellaneous landtypes have severe limitations for recreational development.



TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILTER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19-H | Poor | Steep, stoney soils. (1) | None | High | Low | Low | High | Soils may be stoney & steep. | Water bar | Poor (2) | Unsuited (2) |
| 20 | Poor | High stone & boulder content in places. High elevation, extremely adverse growth conditions. | None | High | Moderate | Low | Moderate | Soils may be very bouldery. | Water bar sloping areas. | Poor (3) | Unsuited (6) |
| 20-A | Poor | High stone & boulder content in places. High elevation, extremely adverse growth conditions. | None | High | High | Low | Moderate | Soils may be very bouldery. | Water bar sloping areas. | Poor (3) | Unsuited (6) |
| 21 | Poor | Very bouldery surfaces. High elevation, extremely adverse growth conditions. | None | Moderate | Low | Low | Poor | Very bouldery surface & moderately steep in places. | Water bar frequently to preserve available tread. | Poor (2) | Unsuited (2) (6) |
| 22 | Unsuited | Steep & stoney slopes. | N/A | N/A | N/A | N/A | Moderate to poor | High cobble & stone content, steep slopes. | Frequent water bars. | N/A | N/A |
| 23 | Unsuited | Very steep slopes. | N/A | N/A | N/A | N/A | Poor | Very steep slopes. | Frequent water bars. | N/A | N/A |
| 24 | Well | Dustiness is potential problem. | Gravel all roads, & limit ORV's. | Low to moderate | High | Low | Well | None | None | Well (5) | Suited |
| 25 | Moderate/well | Dustiness, cobbley soils. | Gravel all roads, & limit ORV's. | Moderate | High | Low | Well | Cobbley soils. | None | Well (5) | Suited |
| 25-H | Moderate | Dustiness, cobbley soils. (1) | Gravel all roads, & limit ORV's. | High | High | Low | Well | Cobbley soils. | None | Well (5) | Suited |
| 26 | Well | Dustiness. | Gravel all roads, & limit ORV's. | Moderate | High | Low | Well | Dustiness | None | Well (5) | Suited |
| 26-H | Moderate | Dustiness. (1) | Gravel all roads, & limit ORV's. | High | High | Low | Well | Dustiness | None | Well (5) | Suited |
| 27 | Unsuited | Dustiness, steep slopes. | N/A | N/A | N/A | N/A | Well | Dustiness | None | N/A | N/A |
| 27-H | Unsuited | Steep slopes. (1) | N/A | N/A | N/A | N/A | Well | Dustiness | None | N/A | N/A |
| 30 | Well | Dustiness | Gravel all roads, & limit ORV's. | Moderate | High | Low | Well | Dustiness | None | Well | Suited |
| 31 | Moderate | Slope & heavy-textured sub-soils in places. | None | Moderate (Compaction) | Low | Moderate to high | Well | None | Water bar sloping areas & avoid wet areas. | Low/moderate (3) | Suited |
| 31-H | Moderate | Slope & heavy-textured sub-soils in places. (1) | None | Moderate (Compaction) | Low | Moderate | Well | None | Water bar sloping areas & avoid wet areas. | Low/moderate (3) | Suited |
| 32 | Unsuited | Steep slopes. | N/A | N/A | N/A | N/A | Moderate | Steepness | Water bar frequently. | N/A | N/A |
| 32-H | Unsuited | Steep slopes. (1) | N/A | N/A | N/A | N/A | Moderate | Steepness | Water bar frequently. | N/A | N/A |

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TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILTER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | Well | Moderately steep slopes locally. | None | Moderate (Compaction) | Moderate | Moderate | Well | None | Water bar frequently. | Well/moderate | Suited |
| 33-H | Well | Moderately steep slopes locally. (1) | None | Moderate (Compaction) | Moderate | Moderate | Well | None | Water bar frequently. | Well/moderate | Suited |
| 34 | Moderate, locally well | Slope & compaction potential. | None | Moderate (Compaction) | Moderate | Moderate | Well | None | Water bar frequently. | Moderate (3) | Suited |
| 34-H | Moderate | Slope & compaction potential. (1) | None | Moderate (Compaction) | Moderate | Moderate | Well | None | Water bar frequently. | Moderate (3) | Suited |
| 35 | Unsuited | Steep slopes. | N/A | N/A | N/A | N/A | Moderate | Steepness & rock outcrop. | Water bar frequently. | N/A | N/A |
| 35-H | Unsuited | Steep slopes. (1) | N/A | N/A | N/A | N/A | Moderate | Steepness & rock outcrop. | Water bar frequently. | N/A | N/A |
| 36 | Unsuited | Steep slopes, shallow soils, hard rock outcrops. | N/A | N/A | N/A | N/A | Poor | Very steep slopes & frequent rock outcrops. | Water bar frequently. | N/A | N/A |
| 36-H | Unsuited | Steep slopes, shallow soils, hard rock outcrops. (1) | N/A | N/A | N/A | N/A | Poor | Very steep slopes & frequent rock outcrops. | Water bar frequently. | N/A | N/A |
| 37 | Moderate | Compaction potential seasonal water table. | Drain wet areas. | Moderate to low | Moderate | Moderate | Moderate to well | Seasonally wet. | Drain or avoid wettest areas. | Poor/unsuited (3) (4) | Suited |
| 38 | Unsuited | Steep slopes, cindery soil. | N/A | N/A | N/A | N/A | Well | Slight dustiness problem. | None | N/A | N/A |
| 39 | Unsuited | Steep slopes, very cobbley soils. | N/A | N/A | N/A | N/A | Poor | Steep slopes, very cobbley soils. | None | N/A | N/A |
| 39-H | Unsuited | Steep slopes, very cobbley soils. (1) | N/A | N/A | N/A | N/A | Poor | Steep slopes, very cobbley soils. | None | N/A | N/A |
| 40 | Moderate/poor | Clayey soils, poor drainage characteristics. | Drain wet areas. | Moderate | Low | High | Well | None | Water bar & drain wet areas. | Poor (3) (4) | Suited |
| 40-H | Poor | Clayey soils, poor drainage. (1) | Drain wet areas. | Moderate | Low | High | Well | None | Water bar & drain wet areas. | Poor (3) (4) | Suited |
| 41 | Moderate | Heavy textured sub-soils & slope steepness locally. | None | Moderate | Moderate | Moderate | Well | None | Water bar | Moderate/poor (3) | Suited |
| 41-H | Moderate/poor | Heavy textured sub-soils & slope steepness locally. (1) | None | Moderate | Moderate | Moderate | Well | None | Water bar | Moderate/poor (3) | Suited |
| 42 | Unsuited | Steep slopes. | N/A | N/A | N/A | N/A | Moderate | Slope steepness. | Water bar frequently. | N/A | N/A |
| 42-H | Unsuited | Steep slopes. (1) | N/A | N/A | N/A | N/A | Moderate | Slope steepness. | Water bar frequently. | N/A | N/A |

NOTE: Miscellaneous landtypes are not rated for recreation due to their high variability. Generally miscellaneous landtypes have severe limitations for recreational development.



TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILEER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | Unsuited | Steep slopes, shallow soils. | N/A | N/A | N/A | N/A | Poor | Shallow soils, steep slopes. | Water bar frequently. | N/A | N/A |
| 43-H | Unsuited | Steep slopes, shallow soils. (1) | N/A | N/A | N/A | N/A | Poor | Shallow soils, steep slopes. | Water bar frequently. | N/A | N/A |
| 46 | Poor | Moderately steep slopes. Very erodable soils in places. | None | High | Low | Low | Well | Very erodable soils. | Water bar frequently. | Moderate (2) | Suited (2) |

NOTE: Miscellaneous landtypes are not rated for recreation due to their high variability. Generally, miscellaneous landtypes have severe limitations for recreational development.

(1) High elevation, adverse climate, short growing season.
(2) Slopes are generally excessive and may limit effectiveness.
(3) Restrictive layer within 30 inches (75 cm.) of surface.
(4) High water table.
(5) Rapid drainage through coarse soils may contaminate adjacent water bodies.
(6) Materials requiring ripping or blasting within 48 inches (120 cm.) of surface.

TABLE OF ENGINEERING INTERPRETATIONS

| LANDTYPE NUMBER | CLASSIFICATION UNIFIED | CLASSIFICATION AASHO | SUITABILITY FOR USE AS TOPSOIL SOURCE | SUITABILITY AS SAND OR GRAVEL SOURCE | SUITABILITY OF SOIL AS CLAY SOURCE | CONSIDERATIONS FOR ROAD LOCATION AND CONSTRUCTION | METHOD OF EXCAVATION | CUTBANK AND DITCH EROSION POTENTIAL | SUSCEPTIBILITY TO CUTBANK SLOUGH AND RAVEL | ESTIMATED CUTSLOPE RATIO | PROBABILITY OF CUTBANK FAILURE | FAILURE POTENTIAL ON ROAD WASTE AND FILL SLOPES | EROSION POTENTIAL ON ROAD WASTE AND FILL SLOPES | SUITABILITY OF ROAD WASTE AND FILL SLOPES TO SEEDING | LIMITATION OF ROAD WASTE AND FILL SLOPES TO SEEDING | SUGGESTIONS FOR ROAD WASTE AND FILL SLOPE SEEDING | SUITABILITY OF CUTBANKS TO SEEDING | LIMITATIONS TO CUTBANK SEEDING | SUGGESTIONS FOR CUTBANK SEEDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Generally unsuited for roading. | Blading & ripping. | High | High | Steep | Very stable. | High | High | Unsuited | Ravel, low fertility. | Seed hearty adapted shrubs. | Poor | Ravel, low fertility, steepness. | None |
| 1 | Not rated | Not rated | Not rated. | Variable | Not rated. | High flooding potential. | Blading & ripping. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | None | Not rated. | Not rated. | None |
| 3 | Not rated | Not rated | Not rated. | Unsuited | Unsuited | Not rated. | Blasting & ripping. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | None | Not rated. | Not rated. | None |
| 4 | Not rated | Not rated | Not rated. | Unsuited | Unsuited | Not rated. | Blasting, ripping & blading. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | None | Not rated. | Not rated. | None |
| 5 | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Steep dissected topography, poor alignment. | Blasting, ripping & blading. | Not rated. | High | Steep | Stable to very unstable. | High | High | Poor | Mostly rock, generally. | None | Poor | Very little soil. | None |
| 6 | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Wet meadows. | Not rated. | Not rated. | Not rated. | Not rated. | Variable | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 7 | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Variable | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 8 | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Variable | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 9 | Not rated | Not rated | Variable | Unsuited | Variable | These areas have a high probability to slump due to road reactivated instability. | Not rated. | High to moderate. | High to moderate. | Not rated. | Moderately stable to very unstable. | High | High to moderate. | Variable | Variable | Not rated. | Variable | Variable | Not rated. |
| 10 | Not rated | Not rated | Unsuited | Unsuited | Unsuited | None | Ripping | Low | Low | Steep | Very stable. | Low | Low | Poor | Low fertility & low AWHC* | (2) | Poor | Low fertility, low AWHC*, shallow surface soils. | (2) |
| 10-H | Not rated | Not rated | Unsuited | Unsuited | Unsuited | None | Ripping | Low | Low | Steep | Very stable. | Low | Low | Poor | Low fertility & low AWHC* (7) | (2) | Poor | Low fertility, low AWHC* shallow surface soils. (7) | (2) |
| 11 | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Ripping | Low | Low | Steep | Very stable. | Low | Low | Moderate | Low fertility. | (5) | Moderate | Low fertility. | (5) (6) |
| 11-H | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Ripping | Low | Low | Steep | Very stable. | Low | Low | Poor | Low fertility. (7) | (5) (8) | Poor | Low fertility. (7) | (5) (6) (8) |
| 12 | GM | A-2-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Well | None | (2) | Moderate to well. | High cobble content. | (2) |
| 12-H | GM | A-2-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | (7) | (2) | Moderate | High cobble content. (7) | (2) |
| 13 | GM | A-1-b | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Well | None | (2) | Well | None | (2) |
| 13-H | GM | A-1-b | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | (7) | (2) | Moderate | (7) | (2) |
| 14 | SP | A-3 | Unsuited | Suited (3) | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | Low AWHC* | (2) | Moderate | Low AWHC*. | (2) |
| 14-H | SP | A-3 | Unsuited | Suited (3) | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | Low AWHC* (7) | (2) | Poor | Low AWHC*. (7) | (2) |
| 15 | SP | A-3 | Unsuited | Suited (3) | Unsuited | Probability of high ravel. | Blading | Low | High ravel. | Moderate | Very stable. | Low | Low | Poor | Low AWHC*, high ravel. | (4) (5) (9) | Poor | Low AWHC*, high ravel. | Seed unpalatable shrubs. (4) (5) (6) (9) |
| 15-H | SP | A-3 | Unsuited | Suited (3) | Unsuited | Probability of high ravel. | Blading | Low | High ravel. | Moderate | Very stable. | Low | Low | Poor | Low AWHC*, high ravel. (7) | (4) (5) (8) (9) | Poor | Low AWHC*, high ravel. (7) | (4) (5) (6) (8) (9) |
| 16 | SM | A-1 | Unsuited | Unsuited to locally suited. (3) | Unsuited | None | Ripping & blasting. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | Low AWHC*, high ravel. (7) | (2) | Poor | Low AWHC*, high ravel. (7) | (2) |
| 17 | Not rated | Not rated | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | (7) | Low germination potential. (2) | Poor | (7) | Low grass seed germination potential. (2) |
| 17-A | SM | A-3 | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | (7) | Low germination potential. (2) | Poor | (7) | Low grass seed germination potential. (2) |
| 18 | GP | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | High cobble & stone content. | Seed drought tolerant grass species. (5) | Moderate | High cobble & stone content. | Seed drought tolerant grass species. (5) (6) |
| 18-H | GP | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | High cobble & stone content. (7) | Seed drought tolerant grass species. (5) | Moderate | High cobble & stone content. (7) | Seed drought tolerant grass species. (5) (6) |
| 19 | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | Low to moderate. | Steep | Very stable. | Low | Low | Moderate | High cobble & stone content. | Seed drought tolerant grass species. (5) | Moderate | High cobble & stone content. | Seed drought tolerant grass species. (5) (6) |
| 19-H | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | Low to moderate. | Steep | Very stable. | Low | Low | Moderate | High cobble & stone content. (7) | Seed drought tolerant grass species. (5) | Moderate | High cobble & stone content. (7) | Seed drought tolerant grass species. (5) (6) |
| 20 | Not rated | Not rated | Unsuited | Unsuited | Unsuited | None | Blasting & ripping. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Unsuited | Cold soils. (7) | (2) | Unsuited | Cold soils. (7) | (2) |
| 20-A | SM | A-3 | Unsuited | Unsuited | Unsuited | None | Blasting & ripping. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Unsuited | Cold soils. (7) | (2) | Unsuited | Cold soils. (7) | (2) |
| 21 | Not rated | Not rated | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | Moderate | Steep | Very stable. | Low | Low | Poor | Extremely stoney soils. | (5) | Poor | Extremely stoney soils. | (5) (6) |
| 22 | GM | A-1-b | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Low | Moderate | Steep | Very stable. | Low | Low | Poor | Cold soils. (7) | Seed adapted species. (5) | Poor | Cold soils. (7) | Seed adapted species. (5) (6) |
| 23 | GM | A-1-a | Unsuited | Unsuited | Unsuited | Interruption of sub-surface water may trigger debris avalanche. | Blading & ripping. | Low | Moderate | Steep | Stable | Low | Low | Moderate | High cobble & stone content, steep slope, infertile sub-soils. (7) | (5) | Poor | High cobble & stone content, infertile sub-soils. (7) | (5) (6) |
| 24 | SM | A-2-4 | Generally suited. | Generally suited. | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Well | Droughty soils. | (2) | Well | Droughty soils. | (2) |
| 25 | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Moderate | Very high cobble content, droughty soils. | (2) | Moderate to poor. | Very high cobble content, droughty soils. | (2) |

* Refers to Available Water Holding Capacity (AWHC)

TABLE OF ENGINEERING INTERPRETATIONS

| LANDTYPE NUMBER | CLASSIFICATION UNIFIED | CLASSIFICATION AASHO | SUITABILITY FOR USE AS TOPSOIL SOURCE | SUITABILITY AS SAND OR GRAVEL SOURCE | SUITABILITY OF SOIL AS CLAY SOURCE | CONSIDERATIONS FOR ROAD LOCATION AND CONSTRUCTION | METHOD OF EXCAVATION | CUTBANK AND DITCH EROSION POTENTIAL | SUSCEPTIBILITY TO CUTBANK SLOUGH AND RAVEL | ESTIMATED CUTSLOPE RATIO | PROBABILITY OF CUTBANK FAILURE | FAILURE POTENTIAL ON ROAD WASTE AND FILL SLOPES | EROSION POTENTIAL ON ROAD WASTE AND FILL SLOPES | SUITABILITY OF ROAD WASTE AND FILL SLOPES TO SEEDING | LIMITATION OF ROAD WASTE AND FILL SLOPES TO SEEDING | SUGGESTIONS FOR ROAD WASTE AND FILL SLOPE SEEDING | SUITABILITY OF CUTBANKS TO SEEDING | LIMITATIONS TO CUTBANK SEEDING | SUGGESTIONS FOR CUTBANK SEEDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-H | GM | A-1-a | Unsuited | Unsuited | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | High elevation, short growing season. (7) | (2) | Poor | Very high cobble content. (7) | (2) |
| 26 | SM | A-4 | Unsuited | Unsuited | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | Droughty soils, low fertility. | (2) | Poor | Droughty soils, low fertility. | (2) |
| 26-H | SM | A-4 | Unsuited | Unsuited | Unsuited | None | Blading | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Poor | Cold soils, low fertility. (7) | (2) | Unsuited | Cold soils, low fertility. (7) | (2) |
| 27 | SM | A-4 | Unsuited | Unsuited | Unsuited | Leave extra room on cutslope side of road to accommodate ravel. | Blading | Low | High ravel. | Steep | Very stable. | Low | Low | Poor | Droughty soils, low fertility. | Seed hardy adapted shrub species. (4) | Poor | High ravel, droughty soils, low fertility. | Seed hardy adapted shrub species. (4) |
| 27-H | SM | A-4 | Unsuited | Unsuited | Unsuited | Leave extra room on cutslope side of road to accommodate ravel. | Blading | Low | High ravel. | Steep | Very stable. | Low | Low | Poor | Cold soils, low fertility. (7) | Seed hardy adapted shrub species. (4) | Poor | High ravel, cold soils, low fertility. (7) | Seed hardy adapted shrub species. (4) |
| 30 | SM/GM | A-4/A-5 | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | N/A | N/A | N/A | Low | Low | Well | None | None | Moderate | Droughty surface soil. | (2) |
| 31 | MH | A-7-5 | Locally suited. | Unsuited | Locally suited. | Plastic, expanding clay in sub-soils locally. | Blading & ripping. | Low | N/A | N/A | N/A | Low | Low | Well | None | (2) | Well | None | (2) |
| 31-H | MH | A-7-5 | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | N/A | N/A | N/A | Low | Low | Moderate | (7) | (2) | Well | (7) | (2) |
| 32 | MH | A-7-5 | Unsuited | Unsuited | Unsuited | Moderately steep slopes. | Ripping & blasting. | Moderate | Low | Steep | Very stable. | Low | Moderate | Well | None | (5) | Well | None | (5) (6) |
| 32-H | MH | A-7-5 | Unsuited | Unsuited | Unsuited | Moderately steep slopes. | Ripping & blasting. | Moderate | Low | Steep | Very stable. | Low | Moderate | Moderate | (7) | (5) (8) | Moderate | (7) | (5) (6) (8) |
| 33 | GM | A-2-4 | Unsuited | Unsuited | Unsuited | None | Ripping & some blasting. | Low | Low | Steep | Very stable. | Low | Low | Well | None | (5) | Well | None | (5) (6) |
| 33-H | GM | A-2-4 | Unsuited | Unsuited | Unsuited | None | Ripping & some blasting. | Low | Low | Steep | Very stable. | Low | Low | Moderate | (7) | (5) (8) | Moderate | (7) | (5) (6) (8) |
| 34 | SM | A-4 | Locally suited. | Unsuited | Unsuited | None | Ripping & blading. | Low | Low | Steep | Very stable. | Low | Low | Well | None | (5) | Well | None | Seed only upper 3 feet. (5) (6) |
| 34-H | SM | A-4 | Locally suited. | Unsuited | Unsuited | None | Ripping & blading. | Low | Low | Steep | Very stable. | Low | Low | Moderate | (7) | (5) (8) | Moderate | (7) | Seed only upper 3 feet. (5) (6) (8) |
| 35 | SM | A-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Moderate | Low | Steep | Very stable. | Low | Moderate | Well | None | (5) | Well | None | Seed only upper 3 feet of cutbank. (5) (6) |
| 35-H | SM | A-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Moderate | Low | Steep | Very stable. | Low | Moderate | Moderate | (7) | (5) (8) | Moderate | (7) | Seed only upper 3 feet of cutbank. (5) (6) (8) |
| 36 | Not rated | Not rated | Unsuited | Unsuited | Unsuited | Very steep slopes, hard rock. | Blasting. | Low | Low | Steep | Stable | Low | Low | Poor | Very high rock content. | (2) | Poor | Shallow soils over rock. | (2) |
| 36-H | Not rated | Not rated | Unsuited | Unsuited | Unsuited | Very steep slopes, hard rock. | Blasting. | Low | Low | Steep | Stable | Low | Low | Poor | Very high rock content. (7) | (2) | Poor | Shallow soils over rock. (7) | (2) |
| 37 | SM | A-4 | Unsuited | Unsuited | Unsuited | Elevated subgrade will provide drainage during wet periods. | Blading & ripping. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Low | Well | None | (2) | Well | None | (2) |
| 38 | SM | A-1-b | Unsuited | Unsuited | Unsuited | None | Blading & ripping. | Low | Low | Steep | Very stable. | Low | Low | Poor | Gravelly & droughty. | (2) | Poor | Gravelly & droughty. | (2) |
| 39 | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep slopes. | Blading & ripping. | Low | Moderate ravel. | Moderate | Stable | Low | Low | Poor | Very gravelly. | (5) | Poor | Very gravelly. | (2) |
| 39-H | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep slopes. | Blading & ripping. | Low | Moderate ravel. | Moderate | Stable | Low | Low | Poor | Very gravelly. (7) | (5) (8) | Poor | Very gravelly. | (2) |
| 40 | OH | A-7-5 | Unsuited | Unsuited | Generally suited. | Poorly drained, plastic clay soils. | Blading & ripping. | Moderate | N/A (1) | N/A (1) | N/A (1) | High | High | Well | Clayey soils. | (5) | Well | Clayey soils. | Seed species adapted to wet clayey soils. (5) (6) |
| 40-H | OH | A-7-5 | Unsuited | Unsuited | Generally suited. | Poorly drained, plastic clay soils. | Blading & ripping. | Moderate | N/A (1) | N/A (1) | N/A (1) | High | High | Well | Clayey soils. (7) | (5) (8) | Well | Clayey soils. (7) | Seed species adapted to wet clayey soils. (5) (6) (8) |
| 41 | ML | A-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Moderate | Well | None | (5) | Well | None | (5) (6) |
| 41-H | ML | A-4 | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Low | N/A (1) | N/A (1) | N/A (1) | Low | Moderate | Moderate | (7) | (5) (8) | Moderate | (7) | (5) (6) (8) |
| 42 | ML | A-4 | Unsuited | Unsuited | Unsuited | Steep slopes. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Well | None | (5) | Well | None | Seed only upper 6 feet. (5) (6) |
| 42-H | ML | A-4 | Unsuited | Unsuited | Unsuited | Steep slopes. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Well | (7) | (5) (8) | Well | (7) | (5) (6) (8) |
| 43 | SM-d | A-2-5 | Unsuited | Unsuited | Unsuited | Steep slopes. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Unsuited | Lack of soil. | (2) | Poor | Extremely shallow soil. | (2) |
| 43-H | SM-d | A-2-5 | Unsuited | Unsuited | Unsuited | Steep slopes. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Unsuited | Lack of soil. (7) | (2) | Poor | Extremely shallow soil. (7) | (2) |
| 46 | SM | A-4 | Unsuited | Unsuited | Unsuited | Potential for alignment problems. | Ripping & blasting. | Moderate | Moderate | Steep | Stable | Low | Moderate | Moderate | Droughty, infertile soil. | (5) (9) | Poor | Droughty, infertile soil. | (5) (6) (9) |

* Refers to Available Water Holding Capacity (AWHC)

FOOTNOTES:

(1) Cutbanks less then 10 feet (3 meters).
(2) Seeding generally not necessary for resource protection.
(3) Sands and gravels may have high pumice content.
(4) Grass seeding may increase ravel due to livestock traffic.
(5) Seed grass, mulch and fertilize.
(6) Leave cutslopes rough to catch seed and fertilizer.
(7) High elevation adverse climate, short growing season.
(8) Seed grass or legume species adapted to short adverse growing season.
(9) Seed grass or legume species adapted to droughty conditions.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (5) |
|---|---|---|---|---|---|---|---|
| 0 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 1 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 3 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 4 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 5 | Not rated | Low/moderate | Very steep, broken topography, highly variable soils. | Not rated | Yarding & roading generally very difficult. | Not rated | Not rated |
| 6 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 7 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 8 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 9 | Not rated | Low/high | Highly variable soils, slopes & water conditions. | Not rated | Groundwater & clayey soils may cause cutbank stability & reforestation problems. | Not rated | Not rated |
| 10 | PH-3<br>PW-3 | Low | Soils are droughty, stoney & shallow to compacted glacial till. | PSME, ABCO | Low growth potential. | PSME | V |
| 10-H | U-1 | Low | Soils are droughty, stoney & shallow to compacted glacial till. (2) | ABCO, PICO | Low growth potential. | ABCO | V |
| 11 | PH-3<br>PW-3 | High to moderate | Locally very stoney & bouldery. (1) | PSME, ABCO | ----- | PSME | IV & III |
| 11-H | U-1 | Moderate | Locally very stoney & bouldery. (1) (2) | ABMA, ABCO | ----- | ABMA | IV |
| 12 | PH-3, PW-3 | High | (1) | PSME, ABCO | ----- | PSME | IV & III |
| 12-H | U-1 | Moderate to high | (1) (2) | ABMA, ABCO | ----- | ABMA | IV & III |
| 13 | PH-2 | Low to moderate | Perennial high water table within 30" of surface. | ABCO, PIEN | High windthrow hazard. | ABCO | IV |
| 13-H | PH-2<br>U-1 | Low | Perennial high water within 30" of surface. | PIEN, ABMA | High windthrow hazard. | PIEN | IV |
| 14 | PH-3<br>PH-4 | Moderate to high | Soils are droughty | PIPO, PIMO, PSME | Limit scarification to 3-4 inch depth. | PIPO | IV & III |
| 14-H | U-1 | Moderate | Soils are droughty<br>(1) (2) | ABMA, PIMO, ABCO | Limit scarification to 3-4 inch depth. | ABMA | IV & III |

*See map for Environmental Zone Delineations.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (5) |
|---|---|---|---|---|---|---|---|
| 15 | PH-3<br>PH-4 | Moderate to high | Soils are droughty | PIPO, PIMO, PSME | Limit scarification to 3-4 inch depth. | PIPO | IV & III |
| 15-H | U-1 | Moderate | Soils are droughty (1) (2) | ABMA, PIMO, ABCO | Limit scarification to 3-4 inch depth. | ABMA | IV & III |
| 16 | U-1 | Moderate | Soils are droughty (2) | ABMA, PIMO, ABCO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth. | ABMA | IV & III |
| | A-1 | Low | (4) | TSME, PICO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth. | TSME | No data |
| 17 | U-1 | Low to moderate | (2) | ABMA, PIMO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth, also high windthrow hazard. | ABMA | IV & V |
| | A-1 | Low | (4) | TSME, PICO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth, also high windthrow hazard. | TSME | No data |
| 17-A | U-1 | Low | (2) (3) | ABMA, PIMO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth, also high windthrow hazard. | ABMA | V |
| | A-1 | Low | (3) (4) | TSME, PICO | Slight scarification greatly increases potential for natural regeneration, limit scarification to 3-4 inch depth, also high windthrow hazard. | TSME | No data |
| 18 | PH-3<br>PH-2<br>PW-3 | High | Soils have high cobble content which may interfere with hand planting. (1) | PSME, TSHE, ABCO | ----- | PSME | III & IV |
| 18-H | U-1 | Moderate to high | Soils have high cobble content which may interfere with hand planting. (1) (2) | ABCO, PIMO, ABMA | ----- | ABCO | IV & III |
| 19 | PH-3<br>PW-3 | High | Soils have high cobble content which may interfere with hand planting. (1) | PSME, ABCO | ----- | PSME | IV & III |

*See map for Environmental Zone Delineations.



TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (5) |
|---|---|---|---|---|---|---|---|
| 19-H | U-1 | Moderate | Soils have high cobble content which may interfere with hand planting. (1) (2) | ABMA, ABCO | ----- | ABMA | IV & III |
| 20 | U-1 | Moderate to low | (2) | ABMA, PIMO | Slight scarification greatly increases potential for natural regeneration. Limit scarification to 3-4 inch depth. High windthrow hazard. | ABMA | IV & V |
| | A-1 | Low | (4) | TSME, PICO | Slight scarification greatly increases potential for natural regeneration. Limit scarification to 3-4 inch depth. High windthrow hazard. | TSME | No data |
| 20-A | U-1 | Low | (2) (3) | ABMA, PIEN, TSME | Slight scarification greatly increases potential for natural regeneration. Limit scarification to 3-4 inch depth. High windthrow hazard. | ABMA | V |
| | A-1 | Low | (3) (4) | TSME, PIEN, PICO | Slight scarification greatly increases potential for natural regeneration. Limit scarification to 3-4 inch depth. High windthrow hazard. | TSME | No data |
| 21 | U-1 | Low | Extremely stoney surface severely inhibits mechanical operations & hand planting. (2) | ABMA, ABCO, PSME | ----- | ABMA | IV & V |
| 22 | U-1 | Moderate | High cobble content may interfere with hand planting. Steep slopes. (2) | ABMA, TSME | ----- | ABMA | IV |
| | A-1 | Low | High cobble content may interfere with hand planting. Steep slopes. (4) | TSME, ABMA | ----- | TSME | No data |
| 23 | U-1 | Moderate | Steep slopes. (1) (2) | ABMA, ABCO, PSME | Debris avalanche hazard. | ABCO | IV |
| 24 | PH-4 | Moderate to low | Soils are droughty | PIPO, PSME | Limit scarification to 3-4 inch depth. Do not remove duff from site. | PIPO | IV & III |
| 25 | PH-4<br>PH-3 | Moderate | Soils are droughty & have high cobble content. | PIPO, PSME | Limit scarification to 3-4 inch depth. Do not remove duff from site. | PIPO | IV & III |

*See map for Environmental Zone Delineations.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (5) |
|---|---|---|---|---|---|---|---|
| 25-H | U-1 | Moderate | Soils are droughty & have high cobble content. (1) (2) | ABCO, ABMA | Limit scarification to 3-4 inch depth. Do not remove duff from site. | ABCO | IV |
| 26 | PH-4 PH-3 | Moderate to low | Soils are droughty (1) (3) | PIPO, PIMO, PSME | Limit scarification to 3-4 inch depth. Do not remove duff from site. | PSME | IV |
| 26-H | U-1 | Low | Soils are droughty (1) (2) (3) | ABMA, PICO, PIMO | Limit scarification to 3-4 inch depth. Do not remove duff from site. | ABMA | IV & V |
| 27 | PH-4 PH-3 | Moderate to low | Soils are droughty (1) (3) | PIPO, PIMO, PSME | Limit scarification to 3-4 inch depth. Do not remove duff from site. | PSME | IV |
| 27-H | U-1 | Low | Soils are droughty (1) (2) (3) | ABMA, PILO, PIMO | Limit scarification to 3-4 inch depth. Do not remove duff from site. | ABMA | IV & V |
| 30 | PH-3 | Moderate | Ashy surface layer is droughty. (3) | PSME, PIPO, ABCO | Limit scarification to 3-4 inch depth. Do not remove duff from site. | PSME | IV & III |
| 31 | PH-3 | High | ----- | PSME, ABCO, PIPO | ----- | PSME | IV |
| 31-H | U-1 | High | (1) | ABCO, ABMA, PIMO | ----- | ABCO | III & IV |
| 32 | PH-3 | High | Moderately steep to steep topography. | PSME, ABCO | ----- | PSME | IV & III |
| 32-H | U-1 | High to moderate | Moderately steep to steep topography. (1) (2) | ABCO, ABMA | ----- | ABCO | IV & III |
| 33 | PH-3, PW-3 | High | ----- | PSME, ABCO | ----- | PSME | III |
| 33-H | U-1 | High to moderate | Moderate brush competition following burning. High elevation may limit access & planting season. | ABMA,ABCO | ----- | ABMA | III |
| 34 | PH-3 | High | ----- | PSME, ABCO | High windthrow hazard on exposed ridgetop & hilltop positions. | PSME | IV & III |
| 34-H | U-1 | High | Moderate brush competition following burning. High elevation may limit access & planting season. | ABCO, ABMA | High windthrow hazard on exposed ridgetop & hilltop positions. | ABCO | IV & III |
| 35 | PH-3 | High | Moderately steep to steep slopes. | PSME, ABCO | High windthrow hazard on exposed ridgetop & hilltop positions. | PSME | IV & III |

*See map for Environmental Zone Delineations.



TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (5) |
|---|---|---|---|---|---|---|---|
| 35-H | U-1 | Moderate | Moderately steep to steep slopes. (1) (2) | ABMA, ABCO | High windthrow hazard on exposed ridgetop & hilltop positions. | ABMA | IV & III |
| 36 | PH-3 PW-3 | Low | Steep slopes, shallow stoney soils may inhibit hand planting. (1) | PSME, PIPO | ----- | PSME | V & IV |
| 36-H | U-1 | Low | Steep slopes, shallow stoney soils may inhibit hand planting. (1) (2) | ABMA, ABCO, TSME | ----- | ABMA | V & IV |
| 37 | PH-3 U-1 | Moderate to high | High water table until mid-summer. | ABCO, PSME, ABMA | High windthrow hazard. | ABCO | III |
| 38 | PH-3 | Moderate | Droughty soils. | ABCO, PIPO, PSME | ----- | ABCO | III & IV |
| 39 | PH-3 PW-3 | Moderate | Steep slopes, stoney soils may inhibit hand planting. | PSME, ABCO, TSHE | ----- | PSME | IV & III |
| 39-H | U-1 | Moderate | Steep slopes, stoney soils may inhibit hand planting. (2) | ABMA, ABCO, TSME | ----- | ABMA | IV |
| 40 | PW-3 PW-2 | Moderate | Clayey soils, frequent wet spots. | PSME, ABCO, TSHE | High windthrow hazard near wet areas. | PSME | IV |
| 40-H | U-1 PW-2 | Moderate | Clayey soils, frequent wet spots. (2) | ABCO, ABMA | High windthrow hazard near wet areas. | ABCO | IV |
| 41 | PW-3 | High to moderate | Site may be droughty. | PSME, PIPO, ABCO | ----- | PSME | IV |
| 41-H | U-1 | Moderate | Strong brush and/or grass competition following harvest. (2) | ABCO, ABMA | ----- | ABCO | IV |
| 42 | PW-3 | High to moderate | Steepness may cause planting difficulty. | PSME, ABCO, TSHE | ----- | PSME | IV & III |
| 42-H | U-1 | Moderate | Steepness may cause planting difficulty, strong brush and/or grass competition following harvest. (2) | ABMA, ABCO, TSME | ----- | ABMA | IV |
| 43 | PW-3 | Low | Shallow soils, steep slopes. | PSME, ABCO | Low site potential, locally high windthrow hazard on exposed upper slopes. | PSME | V |
| 43-H | U-1 | Low | Shallow soils, steep slopes. (1) (2) | ABMA, ABCO | Low site potential, locally high windthrow hazard on exposed upper slopes. | ABMA | V |
| 46 | PW-3 | High | Soils are somewhat droughty. | PSME, PIPO, ABCO | Soils erode easily, minimum scarification should be considered. | PSME | IV & III |

*See map for Environmental Zone Delineations.

FOOTNOTES FOR TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

(1) Strong brush competition following burning.
(2) Adverse climatic conditions may limit seedling establishment, also may limit access and planting season.
(3) Unique thermal and reflective properties of volcanic ash soils frequently results in high seedling frost mortality and stem blistering from reflected ultra violet light rays.
(4) Extremely harsh sub-alpine environment limits most aspects of seedling regeneration.
(5) Douglas-fir site class ratings are based upon information in the U.S.D.A. Technical Bulletin No. 201 by R. E. McArdle, W. H. Meyer, and D. Bruce. All other species are rated in accordance with cubic foot site class categories found in the "Field Instructions for Integrated Forest Survey and Timber Management Inventories in Oregon, Washington, and California", U.S.D.A., Forest Service, R-6.



TABLE OF TIMBER INTERPRETATIONS

POTENTIAL IMPACTS OF HARVESTING TECHNIQUES ON VARIOUS SITE QUALITIES

| LANDTYPE NUMBER | POTENTIAL IMPACTS FROM TRACTOR YARDING | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -NO SUSPENSION- | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -FULL SUSPENSION- | TYPE OF DAMAGE |
|---|---|---|---|---|---|---|
| 0, 1, 2, 3, 4, 6, 7 & 8 | Not rated | Not rated | Not rated | Not rated | Not rated | Not rated |
| 9 | High (High degree of variability) | On this benchy, landslide topography, instability may be reactivated where surface and/or sub-surface hydrology is altered by heavy surface traffic. Site quality may be significantly reduced by compaction which may also contribute to increased run-off and erosion potential. | Moderate to high (High degree of variability) | Log skidding & gouging loosens soil & disturbs duff layers. On steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. | Low to high (High degree of variability) | Insignificant damage expected from this yarding procedure. (1) |
| 10, 11, 12, 18 & 19 | Low | Loss in site quality due to moderate compaction & slight erosion on skid trails & landings. | Low | Log skidding & gouging disturbs soil structure & duff cover. Erosion potential is increased. | Low | Insignificant damage expected from this yarding procedure. |
| 10-H, 11-H, 12-H, 18-H, 19-H & 21 | Moderate to Low | Loss in site quality due to moderate compaction & slight erosion on skid trails & landings. (2) | Low | Log skidding & gouging disturbs soil structure & duff cover. Erosion potential is increased. (2) | Low | Insignificant damage expected from this yarding procedure. |
| 17, 17-A, 20, 20-A & 26-H | Moderate | Substantial loss in site quality where duff layer is removed & soils are compacted. (2) | Moderate | Log skidding & gouging disturbs soil structure & protective duff cover. Erosion potential is increased & productivity may be impared. (2) | Low | Insignificant damage expected from this yarding procedure. |
| 14, 24, 25, 26 & 38 | Low | Slight loss in site quality where soils are heavily disturbed and/or duff layer is removed. | Low | Log skidding & gouging may disturb soil structure & duff cover. Productivity may be temporarily impared. | Low | Insignificant damage expected from this yarding procedure. |
| 14-H, 16 & 25-H | Low | Slight loss in site quality where soils are heavily disturbed and/or duff layer is removed. (2) | Low | Log skidding & gouging may disturb soil structure & duff cover. Productivity may be temporarily impared. (2) | Low | Insignificant damage expected from this yarding procedure. |
| 15 & 27 | High | Severe loss in site quality where duff layer is broken up. These soils ravel easily when disturbed. | High | Log skidding & gouging loosens soil & disturbs duff cover. Due to steep slopes & non-cohesive soils, disturbed sites easily ravel. | Low | Insignificant damage expected from this yarding procedure. (1) |
| 15-H & 27-H | High | Severe loss in site quality where duff layer is broken up. These soils ravel easily when disturbed. (2) | High | Log skidding & gouging loosens soil & disturbs duff cover. Due to steep slopes & non-cohesive soils, disturbed sites easily ravel. (2) | Low | Insignificant damage expected from this yarding procedure. (1) |

## TABLE OF TIMBER INTERPRETATIONS

### POTENTIAL IMPACTS OF HARVESTING TECHNIQUES ON VARIOUS SITE QUALITIES

| LANDTYPE NUMBER | POTENTIAL IMPACTS FROM TRACTOR YARDING | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -NO SUSPENSION- | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -FULL SUSPENSION- | TYPE OF DAMAGE |
|---|---|---|---|---|---|---|
| 5, 36 & 39 | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid roads & landings. | Moderate | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows resulting in increased potential for erosion. | Low to Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 22, 23, 36-H & 39-H | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid roads & landings. (2) | Moderate | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows resulting in increased potential for erosion. (2) | Moderate to Low | Insignificant damage expected from this yarding procedure. (1) |
| 30, 31, 33, 34 & 41 | Low to Moderate | Slight to moderate loss in site quality due to compaction on heavy traffic areas. Exposed soils may erode. | Low | Log skidding & gouging disturbs soil & duff layers. Potential for erosion may be increased. | Low | Insignificant damage expected from this yarding procedure. |
| 31-H, 33-H, 34-H & 41-H | Moderate | Slight to moderate loss in site quality due to compaction on heavy traffic areas. Exposed soils may erode. (2) | Low | Log skidding & gouging disturbs soil & duff layers. Potential for erosion may be increased. (2) | Low | Insignificant damage expected from this yarding procedure. |
| 13, 13-H, 37, 40 & 40-H | High | Severe loss in site quality. Soils have high water tables during all or most of the year. They are very susceptible to compaction & puddling. Structure is easily destroyed. | Moderate to Low | Log skidding & gouging may result in puddling & compaction when surface soils are wet. Site productivity may be substantially reduced where this occurs. | Low | Insignificant damage expected from this yarding procedure. |
| 32, 35, 42, 43 & 46 | High | Severe loss in site quality due to compaction & subsequent erosion. Run-off potential is high on these steep slopes. | Moderate to Low | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes water may be concentrated in yarding furrows, resulting in increased erosion potential. | | Insignificant damage expected from this yarding procedure. (1) |
| 32-H, 35-H, 42-H & 43-H | High | Severe loss in site quality due to compaction & subsequent erosion. Run-off potential is high on these steep slopes. (2) | Moderate | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes water may be concentrated in yarding furrows, resulting in increased erosion potential. (2) | Low | Insignificant damage expected from this yarding procedure. (1) |

(1) Primary impact is from roading system. Damage increases with increasing steepness and degree of dissection.
(2) Site damage recovery may be very slow due to adverse, high elevation climate.





## TABLE OF LANDTYPE CHARACTERISTICS

| | PHYSIOGRAPHIC CHARACTERISTICS | | | | SOIL CHARACTERISTICS | | | | | | | | | VEGETATIVE AND CLIMATOLOGICAL CHARACTERISTICS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LANDTYPE NUMBER | PHYSIOGRAPHIC PROVINCE/ SUB-PROVINCE | LANDFORM AND POSITION DESCRIPTION | ROCK OUTCROP PERCENT | SLOPE RANGE PERCENT | SOIL PROFILE TYPE | SOIL TEXTURAL RANGE | THICKNESS OF SURFACE LAYERS (in.) (cm.) | DEPTH TO SUB-STRATUM (in.) (cm.) | NATURE OF SUB-STRATUM | DRAINAGE CLASS | INTRINSIC PRODUCTIVE POTENTIAL | ROOTING DEPTH (in.) (cm.) | ORIGIN OF SOIL MATERIAL | ENVIRONMENTAL ZONE* | ELEVATION (ft.) (m.) |
| 0 | High Cascades/ non-glaciated. | Very steep, sparsely vegetated pumice canyon walls. | ---- | 70-100+% | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Ash flow material. | Not rated. | Variable |
| 1 | High Cascades & Western Cascades. | River & creek wash along stream channels. | ---- | 0-10% | Not rated. | Not rated. | Not rated. | Not rated. | Alluvial deposits. | Not rated. | Not rated. | Not rated. | Alluvium | Not rated. | Variable |
| 3 | High Cascades & Western Cascades. | Rock outcrop & talus. | 100% | Variable | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Not rated. | Variable |
| 4 | High Cascades/ non-glaciated. | Recent, sparsely vegetated lava, cinder & scoria flows. | Not rated. | Variable | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Volcanic extrusions. | Not rated. | Variable |
| 5 | High Cascades & Western Cascades. | Very steep, highly dissected slopes. | 30-40% | 65-110% | Not rated. | Variable | Variable | Variable | Variable | Variable | Variable | Variable | Colluvium | Not rated. | Variable |
| 6 | High Cascades & Western Cascades. | Permanently wet meadows. | Not rated. | Variable | Not rated. | Variable | Variable | Variable | Variable | Poorly | Variable | Variable | Variable | Not rated. | Variable |
| 7 | High Cascades & Western Cascades. | Seasonally dry meadows & scabland. | Not rated. | 0-35% | Not rated. | Variable | Variable | Variable | Variable | Well | Not rated. | Variable | Variable | Not rated | Variable |
| 8 | High Cascades & Western Cascades. | Seasonally dry meadows & scabland. | Not rated. | 35-70+% | Not rated. | Variable | Variable | Variable | Variable | Well | Not rated. | Variable | Variable | Not rated. | Variable |
| 9 | Western Cascades. | Old landflows & landslide deposits consisting of interconnected steep slopes & benches. | Variable | Variable | Not rated. | Variable | Variable | Variable | Variable | Variable | Variable | Variable | Mainly landslide deposits & debris. | Not rated. | Variable |
| 10 | High Cascades & Western Cascades/ glaciated. (depositional) | Glacial morainic ridgetops. | ---- | 10-35% | 1000 | vgsl & vksl | 10-20" (25-50) | 20-30" (50-75) | Compacted glacial till. | Well | Low | 10-30" (25-75) | Glacial till deposits. | PH-3 PW-3 | 4000-5000' (1220-1525) |
| 10-H | High Cascades & Western Cascades/ glaciated. (depositional) | Glacial morainic ridgetops. | ---- | 10-35% | 1000 | vgsl & vksl | 10-20" (25-50) | 20-30" (50-75) | Compacted glacial till. | Well | Low | 10-30" (25-75) | Glacial till deposits. | U-1 | 5000-6000' (1525-1830) |
| 11 | High Cascades & Western Cascades/ glaciated. (depositional) | Lateral morainic side slopes. | ---- | 20-45% | 1100 | gsl & vksl | 20-40" (50-100) | 50-80" (125-205) | Compacted glacial till. | Well | Moderate | 50-80" (125-205) | Glacial till deposits. | PH-3 PW-3 | 4000-5000' (1220-1525) |
| 11-H | High Cascades & Western Cascades/ glaciated. (depositional) | Lateral morainic side slopes. | ---- | 20-45% | 1100 | gsl & vksl | 20-40" (50-100) | 50-80" (125-205) | Compacted glacial till. | Well | Moderate | 50-80" (125-205) | Glacial till deposits. | U-1 | 5000-6000' (1525-1830) |
| 12 | High Cascades & Western Cascade/ glaciated. (depositional) | Broad, smooth, gently sloping glacial till surfaces. | ---- | 5-15% | 1200 | l & ksl | 20-25" (50-65) | 40-50" (100-125) | Compacted glacial till. | Well | Moderate | 40-50" (100-125) | Glacial till deposits. | PH-3 PW-3 | 4000-5000' (1220-1525) |
| 12-H | High Cascade & Western Cascade/ glaciated. (depositional) | Broad, smooth, gently sloping glacial till surfaces. | ---- | 5-15% | 1200 | l & ksl | 20-25" (50-65) | 40-50" (100-125) | Compacted glacial till. | Well | Moderate | 40-50" (100-125) | Glacial till deposits. | U-1 | 5000-6000' (1525-1830) |
| 13 | High Cascade & Western Cascade/ glaciated. (depositional) | Slightly concave, gently sloping till surfaces. | ---- | 5-15% | 1300 | l & ksl | 10-20" (25-50) | 30-40" (75-100) | Compacted glacial till. | Somewhat poorly. | Moderate | 30-40" (75-100) | Glacial till deposits. | PH-2 | 4000-5000' (1220-1525) |
| 13-H | High Cascade & Western Cascade/ glaciated. (depositional) | Slightly concave, gently sloping till surfaces. | ---- | 5-15% | 1300 | l & ksl | 10-20" (25-50) | 30-40" (75-100) | Compacted glacial till. | Somewhat poorly. | Moderate | 30-40" (75-100) | Glacial till deposits. | PH-2 & U-1 | 5000-6000' (1525-1830) |
| 14 | High Cascades/ glaciated. (depositional) | Broad, flat, glaciofluvial terraces & outwash surfaces. | ---- | 0-15% | 1400 | gsl & glcos | 8-16" (20-40) | 20-40" (50-100) | Stratified alluvium. | Excessively | Low | 20-60" (50-150) | Glaciofluvial deposits & alluvium. | PH-4 & PH-3 | 2500-4500' (760-1370) |
| 14-H | High Cascades/ glaciated. (depositional) | Broad, flat, glaciofluvial terraces & outwash surfaces. | ---- | 0-15% | 1400 | gsl & glcos | 8-16" (20-40) | 20-40" (50-100) | Stratified alluvium. | Excessively | Low | 20-60" (50-150) | Glaciofluvial deposits & alluvium. | U-1 | 4500-5500' (1370-1675) |
| 15 | High Cascades/ glaciated. (depositional) | Moderately steep slopes along dissections within glaciofluvial terraces & flats. | ---- | 15-50% | 1400 | gsl & glcos | 10-20" (25-50) | 25-45" (65-115) | Stratified alluvium. | Excessively | Low | 20-60" (50-150) | Glaciofluvial deposits & alluvium. | PH-4 & PH-3 | 2500-4500' (760-1370) |
| 15-H | High Cascades/ glaciated. (depositional) | Moderately steep slopes along dissections within glaciofluvial terraces & flats. | ---- | 15-50% | 1400 | gsl & glcos | 10-20" (25-50) | 25-45" (65-115) | Stratified alluvium. | Excessively | Low | 20-60" (50-150) | Glaciofluvial deposits & alluvium. | U-1 | 4500-5500' (1370-1675) |
| 16 | High Cascades & Western Cascades/ glaciated. (depositional) | Glaciofluvial deposits in high elevation basins. | ---- | 10-30% | 1600 | gsl & glcos | 6-12" (15-30) | 60-80+" (150-205) | Soft to moderately hard andesite & compacted till. | Excessively | Low | 40-60" (100-150) | Glaciofluvial deposits & alluvium. | U-1 & A-1 | 5000-7000' (1525-2135) |
| 17 | High Cascades & Western Cascades/ glaciated (scoured). | Uneven, slightly convex, glacially scoured surfaces. | 15-20% | 15-45% | 1700 | gsl & vksl | 6-12" (15-30) | 25-50" (65-125) | Moderately hard to hard andesite & compacted till. | Well | Low | 20-40" (50-100) | Glacial till & fine scoria. | U-1 & A-1 | 5000-7000' (1525-2135) |
| 17-A | High Cascades & Western Cascades/ glaciated (scoured). | Uneven, slightly convex, glacially scoured surfaces with eolian volcanic ash surface deposits. | 15-20% | 15-45% | 2000 | gsl & vksl | 6-12" (15-30) | 25-50" (65-125) | Moderately hard to hard andesite & compacted till. | Well | Low | 20-40" (50-100) | Glacial till & volcanic ash. | A-1 & U-1 | 5000-7000' (1525-2135) |

*See map for Environmental Zone Delineations.

TABLE OF LANDTYPE CHARACTERISTICS

| | PHYSIOGRAPHIC CHARACTERISTICS | | | | SOIL CHARACTERISTICS | | | | | | | | | VEGETATIVE AND CLIMATOLOGICAL CHARACTERISTICS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LANDTYPE NUMBER | PHYSIOGRAPHIC PROVINCE/ SUB-PROVINCE | LANDFORM AND POSITION DESCRIPTION | ROCK OUTCROP PERCENT | SLOPE RANGE PERCENT | SOIL PROFILE TYPE | SOIL TEXTURAL RANGE | THICKNESS OF SURFACE LAYERS (in.) (cm.) | DEPTH TO SUB-STRATUM (in.) (cm.) | NATURE OF SUB-STRATUM | DRAINAGE CLASS | INTRINSIC PRODUCTIVE POTENTIAL | ROOTING DEPTH (in.) (cm.) | ORIGIN OF SOIL MATERIAL | ENVIRONMENTAL ZONE* | ELEVATION (ft.) (m.) |
| 18 | High Cascades & Western Cascades/ (depositional). | Gravelly alluvial fans, stringers & terraces. | ---- | 10-20% | 1800 | ksl & vksl | 12-18" (30-45) | 36-48" (90-120) | Gravelly & cobbley alluvium. | Well | Moderate | 40-60" (100-150) | Alluvium | PH-3, PW-3 & PH-2 | 3000-4500' (915-1370) |
| 18-H | High Cascades & Western Cascades/ (depositional). | Gravelly alluvial fans, stringers & terreces. | ---- | 10-20% | 1800 | ksl & vksl | 12-18" (30-45) | 36-48" (90-120) | Gravelly & cobbley alluvium. | Well | Moderate to low. | 40-60" (100-150) | Alluvium | U-1 | 4500-5500' (1370-1675) |
| 19 | High Cascades & Western Cascades/ (depositional). | Colluvial-alluvial cones & toe slopes. | 5-10% | 20-45% | 1900 | gfsl & vksl | 10-20" (25-50) | 36-48" (90-120) | Mixed cobbley colluvium & alluvium. | Well | Low to moderate. | 40-60" (100-150) | Colluvium & alluvium. | PH-3 & PW-3 | 3000-4500' (915-1370) |
| 19-H | High Cascades & Western Cascades/ (depositional). | Colluvial-alluvial cones & toe slopes. | 5-10% | 20-45% | 1900 | gfsl & vksl | 10-20" (25-50) | 36-48" (90-120) | Mixed cobbley colluvium & alluvium. | Well | Low to moderate. | 40-60" (100-150) | Colluvium & alluvium. | U-1 | 4500-5500' (1370-1675) |
| 20 | High Cascades & Western Cascades/ glaciated (scoured). | Broad, gently sloping glaciated basins & scoured lands. | 15-20% | 5-25% | 1700 | sl & gsl | 4-8" (10-20) | 20-36" (50-90) | Hard andesite & compacted till. | Moderately well. | Low | 20-36" (50-90) | Glacial till & fine scoria. | A-1 & U-1 | 5000-6500' (1525-1980) |
| 20-A | High Cascades & Western Cascades/ glaciated (scoured). | Broad, gently sloping glaciated basins & scoured lands with coltan volvanic ash mantle. | 15-20% | 5-25% | 2000 | sl & gsl | 2-6" (5-15) | 20-36" (50-90) | Hard andesite & compacted till. | Moderately well. | Low | 20-36" (50-90) | Glacial till & volcanic ash. | A-1 & U-1 | 5000-6500' (1525-1980) |
| 21 | High Cascades/ glaciated. (depositional) | Long, smooth side slopes with surficial deposits of loose glacial till & rock debris. | 10-15% | 15-45% | 2100 | vstsl & vstl | 20-30" (50-75) | 50-60+" (125-150) | Soft to moderately hard andesite. | Well | Low | 50-60+" (125-150+) | Glacial till & colluvium. | U-1 | 4500-6000' (1370-1830) |
| 22 | High Cascades & Western Cascades/ glaciated (scoured). | Weakly expressed cirque walls & ice-gouged surfaces. | 20-25% | 35-65% | 2200 | gsl & vksl | 8-12" (20-30) | 50-60+" (125-150) | Moderately hard to hard andesite. | Well | Low | 35-55" (90-140) | Colluvium | U-1 & A-1 | 5000-7000' (1525-2135) |
| 23 | High Cascades & Western Cascades/ glaciated. (depositional) | Steep glacial trough walls with thin till veneer. | 15-20% | 50-80% | 1100 | ksl & kl | 20-30" (50-75) | 40-60" (100-150) | Compacted till. | Well | Low to moderate. | 40-60" (100-150) | Glacial till & colluvium. | U-1, PH-2 & PH-3 | 4000-5500' (1220-1675) |
| 24 | High Cascades/ non-glaciated. | Flat, sandy, glaciofluvial depositional surfaces. | ---- | 0-7% | 2400 | sl & ls | 8-14" (20-35) | 40-60+" (100-150) | Stratified alluvium. | Excessively | Low | 40-60" (100-150) | Alluvium | PH-4 | 3000-4000' (915-1220) |
| 25 | High Cascades/ non-glaciated. | Lower slopes of cinder cones & recent volcanoes. | ---- | 10-25% | 2500 | gsl & vksl | 6-12" (15-30) | 40-60" (100-150) | Loose cinder & scoria. | Excessively | Low | 40-60" (100-150) | Scoriaceous volcanic ejecta. | PH-4 & PH-3 | 3500-4500' (1065-1370) |
| 25-H | High Cascades/ non-glaciated. | Lower slopes of cinder cones & recent volcanoes. | ---- | 10-25% | 2500 | gsl & vksl | 6-12" (15-30) | 40-60" (100-150) | Loose cinder & scoria. | Excessively | Low | 40-60" (100-150) | Scoriaceous volcanic ejecta. | U-1 | 4500-5500' (1370-1675) |
| 26 | High Cascades/ non-glaciated. | Broad flats associated with flow pumice deposits of post-glacial & peri-glacial origin. | ---- | 5-20% | 2600 | ls & gsl | 5-10" (10-25) | 30-50" (75-125) | Flow pumice & ash. | Excessively | Low | 40-60" (100-150) | Volcanic ejecta. | PH-4 & PH-3 | 3000-4500' (915-1370) |
| 26-H | High Cascades/ non-glaciated. | Broad flats associated with flow pumice deposits of post-glacial & peri-glacial origin. | ---- | 5-20% | 2600 | ls & gsl | 5-10" (10-25) | 30-50" (75-125) | Flow pumice & ash. | Excessively | Low | 40-60" (100-150) | Volcanic ejecta. | U-1 | 4500-6000' (1370-1830) |
| 27 | High Cascades/ non-glaciated. | Moderately steep surfaces associated with stream dissections within broad flow pumice depositional surfaces. | ---- | 20-55% | 2600 | ls & gsl | 8-15" (20-40) | 35-55" (90-140) | Flow pumice & ash. | Excessively | Low | 40-60" (100-150) | Volcanic ejecta. | PH-3 & PH-4 | 3000-4500' (915-1370) |
| 27-H | High Cascades/ non-glaciated. | Moderately steep surfaces associated with stream dissections within broad flow pumice depositional surfaces. | ---- | 20-55% | 2600 | ls & gsl | 8-15" (20-40) | 35-55" (90-140) | Flow pumice & ash. | Excessively | Low | 40-60" (100-150) | Volcanic ejecta. | U-1 | 4500-6000' (1370-1830) |
| 30 | High Cascades/ non-glaciated. | Broad, flat plateau top with surficial deposits of coltan volcanic ash. | 0-5% | 0-15% | 3000 | sl / cl | 15-30" (40-75) | 50-70+" (125-175) | Soft to moderately hard andesites & basalts. | Well to excessively. | Low to moderate. | 40-60" (100-150) | Volcanic ash & residuum. | PH-3 & PH-4 | 3000-4500' (915-1370) |
| 31 | High Cascades/ non-glaciated. | Long, smooth ridgetops & gentle upper slopes, non-glaciated. | 5-10% | 10-35% | 3100 | l, cl & gl | 15-20" (40-50) | 60-80" (150-205) | Soft to moderately hard andesites & basalts. | Well | Moderate | 40-60" (100-150) | Residuum | PH-3 | 3000-4500' (915-1370) |
| 31-H | High Cascades/ non-glaciated. | Long, smooth ridgetops & gentle upper slopes, non-glaciated. | 5-10% | 10-35% | 3100 | l, cl & gl | 15-20" (40-50) | 60-80" (150-205) | Soft to moderately hard andesites & basalts. | Well | Moderate | 40-60" (100-150) | Residuum | U-1 | 4500-5500' (1370-1675) |
| 32 | High Cascades/ non-glaciated. | Moderately steep to steep, smooth, mid & lower slopes. | 10-15% | 35-65% | 3100 | gl, gcl & kl | 15-20" (40-50) | 60-80" (150-205) | Soft to moderately hard andesites & basalts. | Well | Moderate | 40-60" (100-150) | Residuum & colluvium. | PH-3 PW-3 | 3000-4500' (915-1370) |
| 32-H | High Cascades/ non-glaciated. | Moderately steep to steep, smooth, mid & lower slopes. | 10-15% | 35-65% | 3100 | gl, gcl & kl | 15-20" (40-50) | 60-80" (150-205) | Soft to moderately hard andesites & basalts. | Well | Moderate | 40-60" (100-150) | Residuum & colluvium. | U-1 | 4500-5500' (1370-1675) |
| 33 | High Cascades & Western Cascades/ non-glaciated. | Gently rolling broad surfaces with variable micro-relief. | 0-5% | 5-25% | 3300 | kl, kcl & vkl | 20-30" (50-75) | 50-80" (125-205) | Soft to moderately hard andesites, basalts & breccias. | Well | High | 50-70" (125-175) | Residuum & colluvium. | PH-3 | 3500-5000' (1065-1525) |
| 33-H | High Cascades & Western Cascades/ non-glaciated. | Gently rolling broad surfaces with variable micro-relief. | 0-5% | 5-25% | 3300 | kl, kcl & vkl | 20-30" (50-75) | 50-80" (125-205) | Soft to moderately hard andesites, basalts & breccias. | Well | High | 50-70" (125-175) | Residuum & colluvium. | U-1 | 5000-5500' (1525-1675) |
| 34 | High Cascades/ non-glaciated. | Smooth, rounded, gentle hillslopes. | 0-5% | 5-35% | 3400 | l, cl & kl | 15-25" (40-65) | 30-50" (75-125) | Soft andesites & basalts. | Well | Moderate to high. | 35-50" (90-125) | Residuum | PH-3 | 3500-5000' (1065-1525) |
| 34-H | High Cascades/ non-glaciated. | Smooth, rounded, gentle hillslopes. | 0-5% | 5-35% | 3400 | l, cl & kl | 15-25" (40-65) | 30-50" (75-125) | Soft andesites & basalts. | Well | Moderate to high. | 35-50" (90-125) | Residuum | U-1 | 5000-6000' (1525-1830) |

*See map for Environmental Zone Delineations.



TABLE OF LANDTYPE CHARACTERISTICS

| | PHYSIOGRAPHIC CHARACTERISTICS | | | | SOIL CHARACTERISTICS | | | | | | | | | VEGETATIVE AND CLIMATOLOGICAL CHARACTERISTICS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LANDTYPE NUMBER | PHYSIOGRAPHIC PROVINCE/ SUB-PROVINCE | LANDFORM AND POSITION DESCRIPTION | ROCK OUTCROP PERCENT | SLOPE RANGE PERCENT | SOIL PROFILE TYPE | SOIL TEXTURAL RANGE | THICKNESS OF SURFACE LAYERS (in.) (cm.) | DEPTH TO SUB-STRATUM (in.) (cm.) | NATURE OF SUB-STRATUM | DRAINAGE CLASS | INTRINSIC PRODUCTION POTENTIAL | ROOTING DEPTH (in.) (cm.) | ORIGIN OF SOIL MATERIAL | ENVIRONMENTAL ZONE* | ELEVATION (ft.) (m.) |
| 35 | High Cascades/ non-glaciated. | Smooth, rounded, moderately steep hillslopes. | 5-10% | 35-50% | 3400 | kl, kcl & vkl | 15-25" (40-65) | 30-50" (75-125) | Soft andesites & basalts. | Well | Moderate to high. | 35-50" (90-125) | Residuum & colluvium. | PH-3 | 3500-5000' (1065-1525) |
| 35-H | High Cascades/ non-glaciated. | Smooth, rounded, moderately steep hillslopes. | 5-10% | 35-50% | 3400 | kl, kcl & vkl | 15-25" (40-65) | 30-50" (75-125) | Soft andesites & basalts. | Well | Moderate to high. | 35-50" (90-125) | Residuum & colluvium. | U-1 | 5000-6200' (1525-1890) |
| 36 | High Cascades & Western Cascades/ glaciated (scoured). | Steep to very steep upper slopes on glacial trough walls. | 20-25% | 50-80% | 3600 | vkl & vksl | 6-12" (15-30) | 20-40" (50-100) | Hard andesites & basalts. | Well | Low | 20-40" (50-100) | Colluvium | PH-3 PW-3 | 3500-4500' (1065-1370) |
| 36-H | High Cascades & Western Cascades/ glaciated (scoured). | Steep to very steep upper slopes on glacial trough walls. | 20-25% | 50-80% | 3600 | vkl & vksl | 6-12" (15-30) | 20-40" (50-100) | Hard andesites & basalts. | Well | Low | 20-40" (50-100) | Colluvium | U-1 | 4500-6000' (1370-1830) |
| 37 | High Cascades/ non-glaciated. | Broad, flat & slightly concave surfaces. | 0-5% | 0-7% | 3400 | l & cl | 15-25" (40-65) | 30-50" (75-125) | Soft to moderately hard andesites, basalts & breccias. | Moderately well. | Moderate to high. | 30-50" (75-125) | Residuum | PH-3 & U-1 | 4000-5500' (1220-1675) |
| 38 | High Cascades/ non-glaciated. | Smooth, gentle to moderately steep slopes associated with recent cinder cones. | 0-5% | 25-55% | 3800 | vgsl & vksl | 6-12" (15-30) | 40-60+" (100-150) | Highly vesicular basalts & cinders. | Excessively | Moderate | 50-70+" (125-175) | Residuum | PH-3 | 3500-5000' (1065-1675) |
| 39 | High Cascades & Western Cascades/ glaciated & non-glaciated. | Slightly to moderately dissected, steep to very steep middle & lower slopes on hillsides & glacial trough walls. | 10-15% | 45-80% | 3900 | vkl & vksl | 15-25" (40-65) | 60-80+" (150-205) | Colluvium (Undifferentiated bedrock at depths greater than 10 feet). | Well | Moderate | 50-70+" (125-175) | Colluvium | PH-3 PW-3 | 2500-4500' (760-1370) |
| 39-H | High Cascades & Western Cascades/ glaciated & non-glaciated. | Slightly to moderately dissected, steep to very steep middle & lower slopes on hillsides & glacial trough walls. | 10-15% | 45-80% | 3900 | vkl & vksl | 15-25" (40-65) | 60-80+" (150-205) | Colluvium (Undifferentiated bedrock at depths greater than 10 feet). | Well | Moderate | 50-70+" (125-175) | Colluvium | U-1 | 4500-6000' (1370-1830) |
| 40 | Western Cascades/ non-glaciated. | Gently sloping, slightly concave slump basins associated with large landslides & landslide remnants. | 0-5% | 5-20% | 4000 | cl, sicl & c | 10-15" (25-40) | 30-48" (75-120) | Soft, saprolytic tuffs, breccias & other pyroclastics. | Somewhat poorly. | High | 30-48" (75-120) | Landslide deposits & residuum. | PW-2 | 3000-5000' (915-1525) |
| 40-H | Western Cascades/ non-glaciated. | Gently sloping, slightly concave slump basins associated with large landslides & landslide remnants. | 0-5% | 5-20% | 4000 | cl, sicl & c | 10-15" (25-40) | 30-48" (75-120) | Soft, saprolytic tuffs, breccias & other pyroclastics. | Somewhat poorly. | High | 30-48" (75-120) | Landslide deposits & residuum. | U-1 & PW-2 | 5000-6000' (1525-1830) |
| 41 | Western Cascades/ non-glaciated. | Long smooth ridgetops & gentle upper slopes. | 15-20% | 10-40% | 4200 | l, cl & gl | 10-20" (25-50) | 24-60" (60-150) | Soft to moderately hard tuffs, breccias, basalts & andesites. | Well | Moderate | 30-60" (75-150) | Residuum | PW-3 & PW-4 | 2500-4500' (760-1370) |
| 41-H | Western Cascades/ non-glaciated. | Long smooth ridgetops & gentle upper slopes. | 15-20% | 10-40% | 4200 | l, cl & gl | 10-20" (25-50) | 24-60" (60-150) | Soft to moderately hard tuffs, breccias, basalts & andesites. | Well | Moderate | 30-60" (75-150) | Residuum | U-1 | 4500-6000' (1370-1830) |
| 42 | Western Cascades/ non-glaciated. | Smooth to moderately dissected slightly convex steep mid & lower slopes. | 10-15% | 40-70% | 4200 | gl, gcl & vkl | 10-20" (25-50) | 36-72" (90-180) | Soft to moderately hard tuffs, breccias, hard basalts and andesites. | Well | Moderate to high. | 40-60" (100-150) | Colluvium & residuum. | PW-3 & PW-4 | 2000-4000' (610-1220) |
| 42-H | Western Cascades/ non-glaciated. | Smooth to moderately dissected slightly convex steep mid & lower slopes. | 10-15% | 40-70% | 4200 | gl, gcl & vkl | 10-20" (25-50) | 36-72" (90-180) | Soft to moderately hard tuffs, breccias, hard basalts and andesites. | Well | Moderate to high. | 40-60" (100-150) | Colluvium & residuum. | U-1 | 4000-6000' (1220-1830) |
| 43 | Western Cascades/ non-glaciated. | Smooth to moderately dissected slightly convex steep upper slopes & ridge noses. | 20-25% | 40-70% | 4300 | gl, gcl & vkl | 5-10" (10-25) | 15-40" (40-100) | Soft to moderately hard tuffs, breccias, hard basalts and andesites. | Well | Low | 20-40" (50-100) | Colluvium & residuum. | PW-3 & PW-4 | 2000-4000' (610-1220) |
| 43-H | Western Cascades/ non-glaciated. | Smooth to moderately dissected slightly convex steep upper slopes & ridge noses. | 20-25% | 40-70% | 4300 | gl, gcl & vkl | 5-10" (10-25) | 15-40" (40-100) | Soft to moderately hard tuffs, breccias, hard basalts and andesites. | Well | Low | 20-40" (50-100) | Colluvium & residuum. | U-1 | 4000-6000' (1220-1830) |
| 46 | Western Cascades/ non-glaciated. | Moderately to highly dissected, short, moderately steep side slopes. | 15-20% | 10-40% | 4600 | gl & gsl | 5-10" (10-25) | 30-50" (75-125) | Soft to moderately hard coarse crystalline intrusive rocks of rhyo-dacitic composition. | Well to excessively. | Low | 30-50" (75-125) | Colluvium & residuum. | PW-3 | 3500-4500' (1065-1370) |

*See map for Environmental Zone Delineations.

SOIL RESOURCE INVENTORY ROGUE RIVER NATIONAL FOREST

TABLE OF BEDROCK CHARACTERISITCS

| INCLUDED LANDTYPES | COMPOSITION | COLOR | HARDNESS | DEGREE OF FRACTURING | COMPETENCY | REMARKS |
|---|---|---|---|---|---|---|
| 0, 1, 3, 5, 6, 7, 8, 9, 10, 10-H, 11, 11-H, 12, 12-H, 13, 13-H, 14, 14-H, 15, 15-H, 18 18-H, 19, 19-H, 23, 26, 26-H, 27, 27-H, 39 & 39-H | Undifferentiated Cascade geologic materials. | ----- | ----- | ----- | ----- | ----- |
| 21, 30, 31, 31-H, 32, 32-H, 33, 33-H, 34, 34-H, 35, 35-H, 37 & 46 | Cascade basalts, andesites & breccia. | Light gray to black, red & buff. | Soft to moderately hard. | Slight to moderate. | Competent, locally incompetent. | Local outcrops of hard rock, massive to highly fractured & platy are common. |
| 4, 24, 25, 25-H & 38 | Recent High Cascade basalts, andesites & scoria. | Black to light gray, yellow & red. | Hard to moderately hard. | High to moderate. | Competent | Cinders & scoria associated with recent lava flows are porous. |
| 16, 17, 17-A, 20, 20-A, 22, 36 & 36-H | High Cascade andesites & basalts. | Light gray to black. | Hard to moderately hard. | Moderate to high. | Competent | Soft to moderately hard rock is found locally. |
| 40, 40-H, 41, 41-H, 42, 42-H, 43 & 43-H | Western Cascade tuffs, breccia, agglomerate, tuffaceous sediments, basalt & andesite. | Gray to black, green, red, buff & yellow. | Soft to moderately hard. | Massive to moderate. | Competent to moderately competent. | Local outcrops of hard rock, massive to highly fractured are common, incompetent pyroclastics are found locally. |



TABLE OF NODAL SITE SOIL CHARACTERISTICS

| SOIL NUMBER | LOCATION OF NODAL SITE | SOIL LAYER | SOIL LAYER THICKNESS (in.)(cm.) | MOIST COLOR | TEXTURE | ROCK FRAGMENT PERCENT & SIZE (in.) & (cm.) | ROCK FRAGMENT SHAPE | STRUCTURE GRADE | STRUCTURE SIZE | STRUCTURE TYPE | COMPACTION OR CEMENTATION | PERMEABILITY | DRY CONSISTANCE | MOIST CONSISTANCE | WET CONSISTANCE | PH | ESTIMATED TAXONOMIC CLASSIFICATION 1/ PRINCIPAL FOREST ZONE 2/ | UPPER FOREST ZONE | SUB-ALPINE ZONE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | SW¼ of SW¼, Sec. 26, T. 32 S., R. 4 E. | 1 | 0-15" (0-40) | Very dark brown. | Very gravelly loam. | 50% - 1-3" (3-7 cm.) 5% - 3-10" (7-25 cm.) | Rounded | Weak | Very fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | Loamy-skeletal mixed frigid family of Entic Durixeroll. | Loamy-skeletal mixed frigid family of Typic Fraglumbrepts. | ---- |
| | | 2 | 15-22" (40-55) | Very dark grayish brown. | Very gravelly sandy loam. | 60% - 1-3" (3-7 cm.) 5% - 3-10" (7-25 cm.) | Rounded | ---- | ---- | Massive | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.6 | | | |
| | | 3 | 22-100+" (55-255) | STRONGLY COMPACTED GLACIAL TILL | | | | | | | | | | | | | | | |
| 1100 | SW¼ of SW¼, Sec. 12, T. 29 S., R. 4 E. | 1 | 0-10" (0-25) | Dark brown. | Gravelly sandy loam. | 35% - 1-3" (3-7 cm.) 5% - 3-10" (7-15 cm.) | Rounded | Moderate | Very fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal mixed frigid family of Entic Xerumbrepts. | Loamy-skeletal mixed frigid family of Entic Haplumbrepts. | ---- |
| | | 2 | 10-38" (25-95) | Dark yellowish brown. | Gravelly fine sandy loam. | Same as above. | Rounded | Weak | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | | | |
| | | 3 | 38-50" (95-125) | Dark yellowish brown. | Gravelly fine sandy loam. | Same as above. | Rounded | ---- | ---- | Massive | Weak compaction. | Slow | Hard | Firm | Non-sticky & non-plastic. | 5.8 | | | |
| | | 4 | 50-100+" (125-255) | STRONGLY COMPACTED GLACIAL TILL | | | | | | | | | | | | | | | |
| 1200 | SW¼ of NE¼, Sec. 14, T. 33 S., R. 4 E. | 1 | 0-20" (0-50) | Dark reddish brown. | Gravelly fine sandy loam. | 20% - 1-3" (3-7 cm.) 15% - 3-10" (7-25 cm.) | Rounded | Weak | Fine | Granular | ---- | Rapid | Soft | Soft | Non-sticky & non-plastic. | 6.4 | Loamy-skeletal mixed frigid family of Pachic Haploxeroll. | Loamy-skeletal mixed frigid family of Pachic Haplumbrepts. | ---- |
| | | 2 | 20-48" (50-120) | Dark reddish brown. | Gravelly loam. | Same as above. | Rounded | Moderate | Medium | Subangular blocky. | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | | | |
| | | 3 | 48-100+" (120-255) | STRONGLY COMPACTED GLACIAL TILL | | | | | | | | | | | | | | | |
| 1300 | NW¼ of NE¼, Sec. 23, T. 34 S., R. 4 E. | 1 | 0-13" (0-35) | Dark brown. | Gravelly loam. | 20% - 1-3" (3-7 cm.) 15% - 3-10" (7-25 cm.) | Rounded | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed frigid family of Typic Fragiochrepts. | Loamy-skeletal mixed frigid family of Typic Fragiochrepts. | ---- |
| | | 2 | 13-30" (35-75) | Strong brown. | Gravelly loam. | Same as above. | Rounded | Moderate | Medium | Subangular blocky. | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 30-100+" (75-255) | STRONGLY COMPACTED GLACIAL TILL | | | | | | | | | | | | | | | |
| 1400 | SE¼ of NW¼, Sec. 20, T. 31 S., R. 3 E. | 1 | 0-3" (0-8) | Very dark brown. | Loamy sand. | 20% - .1-1" (2 mm. - 3 cm.) | Rounded | Weak | Very fine | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.4 | Sandy mixed frigid & sandy mixed mesic family of Dystric Xeropsamments. | Sandy mixed frigid family of Typic Ustipsamments. | ---- |
| | | 2 | 3-9" (8-25) | Very dark grayish brown. | Loamy sand. | 25% - .1-1" (2 mm. - 3 cm.) | Rounded | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 9-60+" (25-150) | Dark grayish brown. | Loamy sand. | Same as above. | Rounded | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.0 | | | |
| 1600 | SE¼ of NW¼, Sec. 18, T. 32 S., R. 5 E. | 1 | 0-8" (0-20) | Very dark grayish brown. | Gravelly sandy loam. | 40% - .1-1" (2 mm. - 3 cm.) | Sub-angular | Weak | Very fine | Granular | ---- | Moderate | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | ----- | Medial-skeletal frigid family of Andeptic Udorthents. | Medial skeletal family of Andeptic Cryorthents. |
| | | 2 | 8-30" (20-75) | Dark grayish brown. | Gravelly loamy sand. | Same as above. | Sub-angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 5.8 | | | |
| | | 3 | 30-58" (75-145) | Dark brown. | Very cobbley loamy sand. | 50% - 3-10" (7-25 cm.) | Sub-angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.6 | | | |
| | | 4 | 58-90+" (145-230) | Dark yellowish brown. | Very cobbley loam. | 50% - 3-10" (7-25 cm.) | Sub-angular | ---- | ---- | Massive | ---- | Moderately rapid. | Slightly hard. | Friable | Non-sticky & non-plastic. | 6.6 | | | |
| 1700 | SE¼ of NW¼, Sec. 21, T. 35 S., R. 5 E. | 1 | 0-4" (0-10) | Dark brown. | Sandy loam. | 20% - .1-1" (2 mm. - 3 cm.) | Round | Weak | Very fine | Granular | ---- | Moderate | Soft | Very friable. | Non-sticky & non-plastic. | 5.4 | ----- | Ashy frigid family of Andeptic Udorthents. | Ashy family of Andeptic Cryorthents. |
| | | 2 | 4-8" (10-20) | Dark reddish brown. | Sandy loam. | Same as above. | Round | ---- | ---- | Single grain. | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 5.6 | | | |
| | | 3 | 8-30" (20-75) | Dark reddish brown. | Gravelly sandy loam. | 35% - .1-3" (2 mm. - 7 cm.) | Round | ---- | ---- | Single grain. | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 5.6 | | | |
| | | 4 | HARD ANDESITE | | | | | | | | | | | | | | | | |
| 1800 | NW¼ of SE¼, Sec. 12, T. 32 S., R. 4 E. | 1 | 0-16" (0-40) | Dark brown. | Very cobbley sandy loam. | 30% - .1-3" (2 mm. - 7 cm.) 30% - 3-10" (7-25 cm.) | Round | Weak | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | Loamy-skeletal mixed frigid family of Pachic Ultic Haploxerolls. | Loamy-skeletal mixed frigid family of Pachic Haplumbrepts. | ---- |
| | | 2 | 16-36" (40-90) | Dark brown. | Very cobbley sandy loam. | Same as above. | Round | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.1 | | | |
| | | 3 | 36-60+" (90-150) | Dark yellowish brown. | Very cobbley loamy sand. | Same as above. | Round | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.1 | | | |
| 1900 | SW¼ of NW¼, Sec. 14, T. 32 S., R. 4 E. | 1 | 0-12" (0-30) | Very dark brown. | Very cobbley sandy loam. | 20% - .1-3" (2 mm. - 7 cm.) 35% - 3-10" (7-25 cm.) | Angular | Weak | Very fine | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal mixed frigid family of Pachic Ultic Haploxerolls. | Loamy-skeletal mixed frigid family of Pachic Haplumbrepts. | ---- |
| | | 2 | 12-60+" (30-150) | Dark brown. | Very cobbley fine sandy loam. | Same as above | Angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 5.8 | | | |
| 2000 | NW¼ of NE¼, Sec. 25, T. 33 S., R. 5 E. | 1 | 0-7" (0-20) | Dark brown. | Gravelly sandy loam. | 40% - .1-2" (2 mm. - 5 cm.) | Round | Moderate | Fine | Granular | ---- | Moderate | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | ----- | Ashy-skeletal family of Andeptic Udorthents. | Ashy-skeletal family of Andeptic Cryorthents. |
| | | 2 | 7-20" (20-50) | Dark yellowish brown. | Gravelly sandy loam. | Same as above. | Round | ---- | ---- | Massive | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | | | |
| | | 3 | 20-26" (50-65) | Dark yellowish brown. | Very cobbley sandy loam. | 30% - .1-3" (2 mm. - 7 cm.) 30% - 3-10" (7-25 cm.) | Round | ---- | ---- | Massive | Weak Compaction | Moderate | Hard | Firm | Non-sticky & non-plastic. | 6.4 | | | |
| | | 4 | 26-60+" (65-150) | HARD ANDESITE | | | | | | | | | | | | | | | |

TABLE OF MODAL SITE SOIL CHARACTERISTICS

| SOIL NUMBER | LOCATION OF MODAL SITE | SOIL LAYER | SOIL LAYER THICKNESS (in.)(cm.) | MOIST COLOR | TEXTURE | ROCK FRAGMENT PERCENT & SIZE (in.) & (cm.) | ROCK FRAGMENT SHAPE | STRUCTURE GRADE | STRUCTURE SIZE | STRUCTURE TYPE | COMPACTION OR CEMENTATION | PERMEABILITY | DRY CONSISTANCE | MOIST CONSISTANCE | WET CONSISTANCE | PH | ESTIMATED TAXONOMIC CLASSIFICATION 1/ PRINCIPAL FOREST ZONE 2/ | UPPER FOREST ZONE | SUB-ALPINE ZONE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2100 | NE¼ of SW¼, Sec. 26, T. 31 S., R. 4 E. | 1 | 0-28" (0-70) | Very dark grayish brown. | Very stoney sandy loam. | 35% - .1-10" (2 mm. - 25 cm.) 50% - 10-24" (25-60 cm.) | Round | Weak | Fine | Granular | ---- | Rapid | Soft | Very friable | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed frigid family of Pachic Ultic Haploxeroll. | Loamy-skeletal mixed frigid family of Pachic Haplumbrepts. | ---- |
| | | 2 | 28-70" (70-180) | Dark brown. | Very gravelly sandy loam. | 40% - .1-3" (2 mm. - 7 cm.) | Round | ---- | ---- | Single grain. | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 70-150" (180-380) | Dark brown. | Very gravelly sandy loam. | Same as above. | Round | ---- | ---- | Single grain. | Weak Compaction. | Moderate | Hard | Firm | Non-sticky & non-plastic. | 5.8 | | | |
| | | 4 | 150-200+" (380-510) | SOFT, DECOMPOSED ANDESITE | | | | | | | | | | | | | | | |
| 2200 | NW¼ of NE¼, Sec. 10, T. 32 S., R. 4 E. | 1 | 0-10" (0-25) | Very dark brown. | Very cobbley sandy loam. | 15% - .1-3" (2 mm. - 7 cm.) 35% - 3-10" (7-25 cm.) | Angular | Moderate | Fine | Platy | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.2 | ----- | Medial-skeletal frigid family of Andeptic Udorthents. | Medial-skeletal family of Andeptic Cryorthents. |
| | | 2 | 10-60+" (25-150) | Dark yellow-ish brown. | Very cobbley sandy loam. | Same as above | Angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.4 | | | |
| 2400 | SE¼ of SW¼, Sec. 25, T. 35 S., R. 3 E. | 1 | 0-14" (0-35) | Very dark grayish brown. | Sandy loam. | 30% - .1-2" (2 mm. - 5 cm.) | Round | Weak | Medium | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic | 6.6 | Coarse-loamy mixed mesic family of Entic Haploxerolls. | ----- | ----- |
| | | 2 | 14-60+" (35-150) | Dark yellow-ish brown. | Gravelly loamy sand. | 30% - .1-3" (2 mm. - 7 cm.) | Round | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.4 | | | |
| 2500 | SE¼ of NE¼, Sec. 32, T. 35 S., R. 4 E. | 1 | 0-10" (0-25) | Very dark grayish brown. | Very gravelly sandy loam. | 50% - .1-2" (2 mm. - 7 cm.) | Sub-angular | Moderate | Fine | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed frigid/mesic family of Entic Haploxerolls. | Loamy-skeletal mixed frigid family of Entic Haplumbrepts. | ----- |
| | | 2 | 10-72+" (25-180) | Brown. | Very cobbley sandy loam. | 75% - 3-10" (7-25 cm.) | Sub-angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.6 | | | |
| 2600 | SW¼ of SE¼, Sec. 21, T. 29 S., R. 4 E. | 1 | 0-9" (0-20) | Very dark grayish brown. | Sandy loam. | 20% - .1-1" (2 mm. - 3 cm.) | Round | Weak | Fine | Granular | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 6.4 | Ashy frigid/ashy mesic family of Typic Xeropsamments. also Cindery frigid/mesic family of Andeptic Xerorthents. | Ashy frigid family of Typic Udipsamments. also Cindery frigid family of Andeptic Udorthents. | ----- |
| | | 2 | 9-14" (20-35) | Brown. | Loamy fine sand. | Same as above. | Round | ---- | ---- | Massive | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.6 | | | |
| | | 3 | 14-60+" (35-150) | Yellowish brown. | Loamy fine sand. | Same as above. | Round | ---- | ---- | Massive | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.6 | | | |
| 3000 | NW¼ of SW¼, Sec. 8, T. 33 S., R. 4 E. | 1 | 0-9" (0-20) | Dark reddish brown. | Sandy loam. | 15% - .1-1" (2 mm. - 3 cm.) | Round | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Ashy over loamy mixed frigid family of Typic Xerorthents. | ----- | ----- |
| | | 2 | 9-33" (20-85) | Brown. | Sandy loam. | Same as above. | Round | ---- | ---- | Massive | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.4 | | | |
| | | 3 | 33-66" (85-165) | Dark reddish brown. | Loam. | 20% - 3-10" (7-25 cm.) | Angular | ---- | ---- | Massive | ---- | Moderate | Soft | Very friable. | Slightly sticky/plastic. | 6.0 | | | |
| | | 4 | 66-80+" (165-205) | SOFT SAPROLYTIC ANDESITE | | | | | | | | | | | | | | | |
| 3100 | NE¼ of SE¼, Sec. 17, T. 32 S., R. 4 E. | 1 | 0-16" (0-40) | Dark brown. | Loam | 20% - .1-3" (2 mm. - 7 cm.) | Round to sub-angular. | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Slightly sticky & non-plastic. | 6.2 | Fine-loamy mixed frigid & mesic family of Typic Argixeroll. | Fine-loamy mixed frigid family of Mollic Eutroboralfs. | ---- |
| | | 2 | 16-28" (40-70) | Dark brown. | Loam | Same as above. | Round to sub-angular. | Moderate | Fine | Suoangular blocky. | ---- | Moderate | Slightly hard. | Friable | Slightly sticky/plastic. | 6.2 | | | |
| | | 3 | 28-52" (70-130) | Dark brown. | Clay loam. | 15% - .1-3" (2 mm. - 7 cm.) | Round to sub-angular. | Strong | Medium | Suoangular blocky. | ---- | Moderate | Slightly hard. | Firm | Slightly sticky/plastic. | 5.8 | | | |
| | | 4 | 52-60+" (130-150) | HIGHLY WEATHERED, SOFT TO MODERATELY HARD BASALT | | | | | | | | | | | | | | | |
| 3300 | NW¼ of SW¼, Sec. 33, T. 33 S., R. 4 E. | 1 | 0-14" (0-35) | Dark reddish brown. | Cobbley loam. | 20% - .1-3" (2 mm. - 7 cm.) 30% - 3-10" (7-25 cm.) | Subangular | Strong | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal mixed frigid family of Typic Haploxeralfs. | Loamy-skeletal mixed frigid family of Typic Eutroboralfs. | ---- |
| | | 2 | 14-55" (35-140) | Brown | Cobbley loam. | Same as above. | Subangular | Moderate | Coarse | Subangular blocky. | ---- | Rapid | Slightly hard. | Friable. | Slightly sticky/plastic. | 5.6 | | | |
| | | 3 | 55-105" (140-265) | Brown | Loam | 20% - 1-3" (3-7 cm.) | Subangular | ---- | ---- | Massive | ---- | Slow | Slightly hard. | Firm | Slightly sticky/plastic. | 5.2 | | | |
| | | 4 | 105-120+" (265-305) | HIGHLY WEATHERED, SOFT, MASSIVE BUFF-COLORED TUFF | | | | | | | | | | | | | | | |
| 3400 | SE¼ of SW¼, Sec. 7, T. 34 S., R. 4 E. | 1 | 0-20" (0-50) | Dark brown. | Gravelly loam. | 25% - .1-3" (2 mm. - 7 cm.) 20% - 3-10" (7-25 cm.) | Subangular | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal mixed frigid or mesic family of Typic Argixerolls. | Loamy-skeletal mixed frigid family of Mollic Eutroboralfs. | ---- |
| | | 2 | 20-50" (50-125) | Dark brown. | Loam | 15% - 3-10" (7-25 cm.) | Subangular | Moderate | Medium | Subangular blocky. | ---- | Moderate | Slightly hard. | Friable. | Slightly sticky/plastic. | 6.0 | | | |
| | | 3 | 50-60+" (125-150) | HIGHLY WEATHERED, SOFT, MASSIVE BASALT | | | | | | | | | | | | | | | |
| 3600 | NW¼ of NW¼, Sec. 2, T. 33 S., R. 4 E. | 1 | 0-8" (0-20) | Dark brown. | Very cobbley loam. | 60% - 3-10" (7-25 cm.) | Angular | Moderate | Very fine. | Granular | ---- | Rapid | Loose | Very friable. | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed frigid family of Lithic Ultic Haploxerolls. | Loamy-skeletal mixed frigid family of Lithic Haplumbrepts. | ---- |
| | | 2 | 8-20" (20-50) | Brown | Very cobbley loam. | Same as above. | Angular | Weak | Fine | Granular | ---- | Rapid | Loose | Very friable. | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 20+" (50+) | HARD ANDESITE | | | | | | | | | | | | | | | |
| 3800 | NE¼ of SW¼, Sec. 8, T. 37 S., R. 4 E. | 1 | 0-6" (0-15) | Dusky red. | Very gravelly sandy loam. | 70% - .1-1" (2 mm. - 3 cm.) | Vesicular, round. | Weak | Very fine. | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | Cindery frigid family of Typic Xerorthents. | Cindery frigid family of Typic Udorthents. | ---- |
| | | 2 | 6-60+" (15-150) | Dark reddish brown. | Very gravelly sandy loam. | Same as above. | Vesicular, round. | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.0 | | | |
| 3900 | SW¼ of NW¼, Sec. 26, T. 29 S., R. 4 E. | 1 | 0-20" (0-50) | Dark brown. | Very cobbley sandy loam. | 30% - .1-3" (2 mm. - 7 cm.) 40% - 3-10" (7-25 cm.) | Angular | Weak | Very fine. | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed frigid & mesic family Typic Xerochrepts. | Loamy-skeletal mixed frigid family of Typic Dystrochrepts. | ---- |



TABLE OF MODAL SITE SOIL CHARACTERISTICS

| SOIL NUMBER | LOCATION OF MODAL SITE | SOIL LAYER | SOIL LAYER THICKNESS (in.)(cm.) | MOIST COLOR | TEXTURE | ROCK FRAGMENT PERCENT & SIZE (in.) (cm.) | ROCK FRAGMENT SHAPE | STRUCTURE GRADE | STRUCTURE SIZE | STRUCTURE TYPE | COMPACTION OR CEMENTATION | PERMEABILITY | DRY CONSISTANCE | MOIST CONSISTANCE | WET CONSISTANCE | PH | ESTIMATED TAXONOMIC CLASSIFICATION 1/ PRINCIPAL FOREST ZONE 2/ | UPPER FOREST ZONE | SUB-ALPINE ZONE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3900 Continued | | 2 | 20-36" (50-90) | Dark yellow-ish brown. | Very cobbley sandy loam. | 30% - .1-3" (2 mm. - 7 cm.) 40% - 3-10" (7-25 cm.) | Angular | ---- | ---- | Single grain. | ---- | Very rapid | Loose | Loose | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 36-100+" (75-150) | Dark reddish brown. | Very cobbley sandy loam. | Same as above. | Angular | ---- | ---- | Single grain. | ---- | Very rapid. | Loose | Loose | Non-sticky & non-plastic. | 6.0 | | | |
| 4000 | NW¼ of SE¼, Sec. 15, T. 31 S., R. 2 E. | 1 | 0-10" (0-25) | Black | Silty clay loam. | 5% - .1-1" (2 mm. - 3 cm.) | Subangular | Strong | Fine | Subangular blocky. | ---- | Moderate | Very hard. | Very firm. | Sticky & very plastic. | 5.2 | Fine montmorillonitic frigid or mesic family of Vertic Argixerolls. | Fine montmorillonitic frigid family of Mollic Eutroboralfs. | ---- |
| | | 2 | 10-18" (25-45) | Very dark gray. | Silty clay. | Same as above. | Subangular | Strong | Medium | Subangular blocky. | ---- | Slow | Very hard. | Very firm. | Very sticky & very plastic. | 4.8 | | | |
| | | 3 | 18-37" (45-95) | Dark yellow-ish brown. | Clay loam. | 10% - .1-1" (2 mm. - 3 cm.) | Subangular | Strong | Coarse | Subangular blocky. | ---- | Slow | Very hard. | Very firm. | Very sticky & very plastic. | 5.0 | | | |
| | | 4 | 37-50+" (95-125) | HIGHLY WEATHERED, SOFT TO MODERATELY HARD BUFF-COLORED TUFF | | | | | | | | | | | | | | | |
| 4200 | SW¼ of NW¼, Sec. 29, T. 32 S., R. 1 E. | 1 | 0-11" (0-25) | Very dark brown. | Gravelly loam. | 35% - .1-3" (2 mm. - 7 cm.) | Round | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & slightly plastic. | 6.2 | Fine-loamy mixed frigid family of Ultic Argixerolls. also Fine-loamy mixed mesic family of Typic Haploxerults. | Fine-loamy mixed frigid family of Mollic Eutroboralfs. | ---- |
| | | 2 | 11-17" (25-45) | Dark brown. | Clay loam. | 20% - .1-3" (2 mm. - 7 cm.) | Round | Moderate | Medium | Subangular blocky. | ---- | Moderate | Slightly hard. | Firm | Slightly sticky/plastic. | 6.0 | | | |
| | | 3 | 17-45" (45-115) | Yellowish red. | Silty clay loam. | Same as above. | Round | ---- | ---- | Massive | ---- | Slow | Slightly hard. | Firm | Slightly sticky/plastic. | 5.6 | | | |
| | | 4 | 45-60+" (115-150) | SOFT, SAPROLYTIC, REDDISH TUFF | | | | | | | | | | | | | | | |
| 4300 | NW¼ of SE¼, Sec. 30, T. 32 S., R. 1 E. | 1 | 0-9" (0-20) | Very dark grayish brown. | Gravelly loam. | 35% - .1-1" (2 mm. - 3 cm.) | Subangular | Strong | Fine | Subangular blocky. | ---- | Rapid | Slightly hard. | Firm | Slightly sticky/plastic. | 5.6 | Loamy-skeletal mixed frigid family of Lithic Ultic Haploxerolls. | Loamy-skeletal mixed frigid family of Lithic Haplumbrepts. | ---- |
| | | 2 | 9-15" (20-40) | Grayish brown. | Gravelly clay loam. | Same as above. | Subangular | ---- | ---- | Massive | ---- | Moderate | Hard | Firm | Slightly sticky/plastic. | 5.8 | | | |
| | | 3 | 15-20+" (40-50) | MODERATELY HARD TO HARD GREENISH TUFF | | | | | | | | | | | | | | | |
| 4600 | SW¼ of SW¼, Sec. 18, T. 31 S., R. 3 E. | 1 | 0-10" (0-25) | Dark grayish brown. | Gravelly sandy loam. | 45% - .1-1" (2 mm. - 3 cm.) | Angular | Weak | Fine | Granular | ---- | Rapid | Loose | Very friable. | Non-sticky & non-plastic. | 6.3 | Loamy-skeletal mixed frigid family of Typic Xerorthents. | ----- | ---- |
| | | 2 | 10-60+" (25-150) | Brown | Gravelly sandy loam. | Same as above. | Angular | ---- | ---- | Massive | ---- | Moderate | Slightly hard. | Friable | Slightly sticky/plastic. | 6.0 | | | |



FOOTNOTES:
(1) The elevations in the Cascade Mountains portion of the forest range from about 2500 feet (760 meters) to nearly 10,000 feet (3,100 meters). Accompanying an increase in elevation are: a) an increase in precipitation, b) a decrease in overall temperature, and c) a shortening of the growing season. Soil taxonomic differences are a reflection of these variables even though the soil profile itself may appear outwardly to remain relatively constant.
(2) The majority of the Principal Forest Environmental Zone occupies a frigid temperature regime; however, the boundary between mesic and frigid regime is not clearly established. There is little doubt that some low elevation portions of the forest occupy mesic temperature regimes and for this reason, a few of the soils in this zone have been given a dual classification. Mesic soils are of only a minor extent of the Cascade portion of the forest.

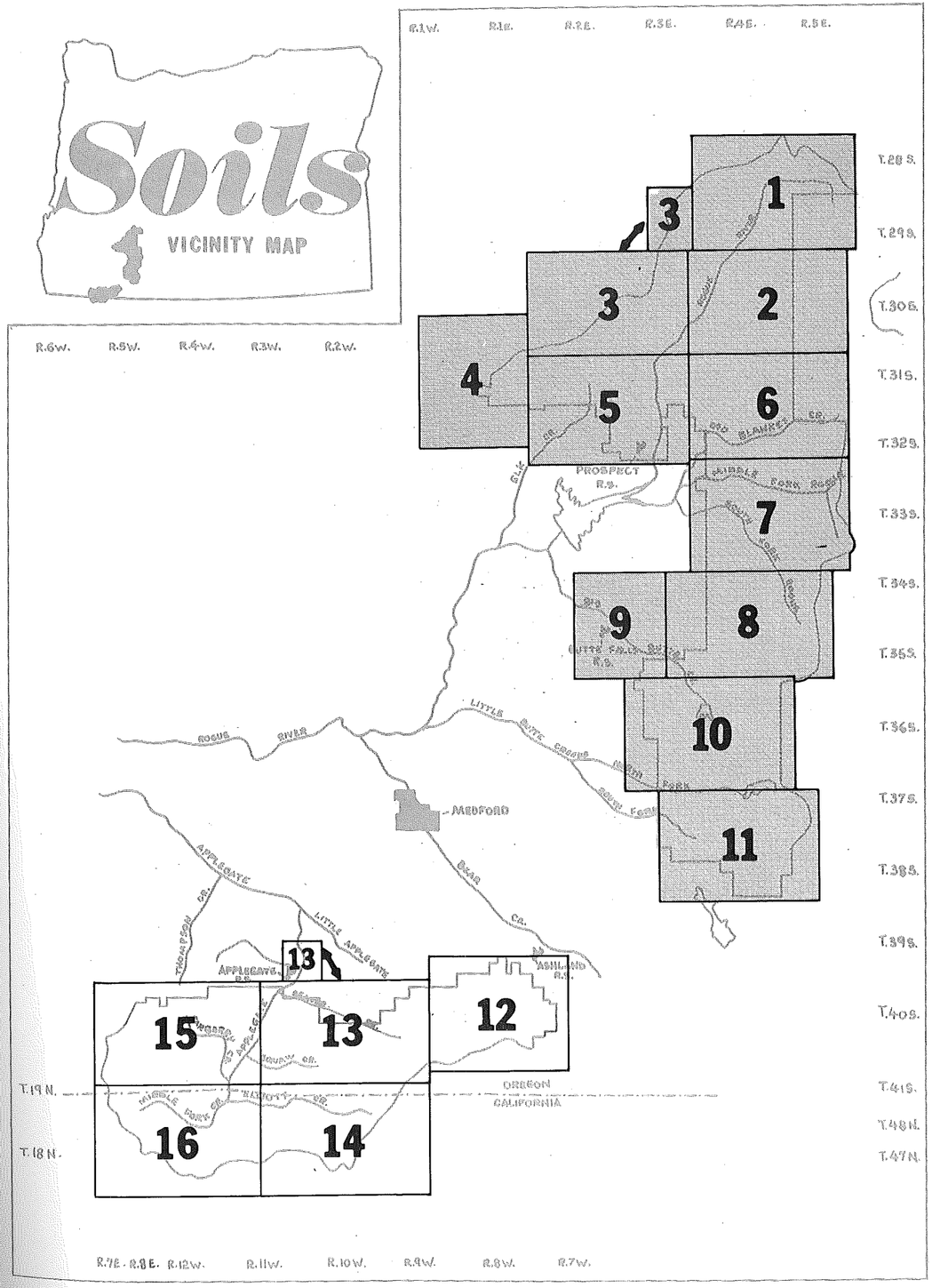
# LANDTYPE MAPS

# FOR THE

# CASCADE MOUNTAINS

# PORTION OF THE

# ROGUE RIVER NATIONAL FOREST

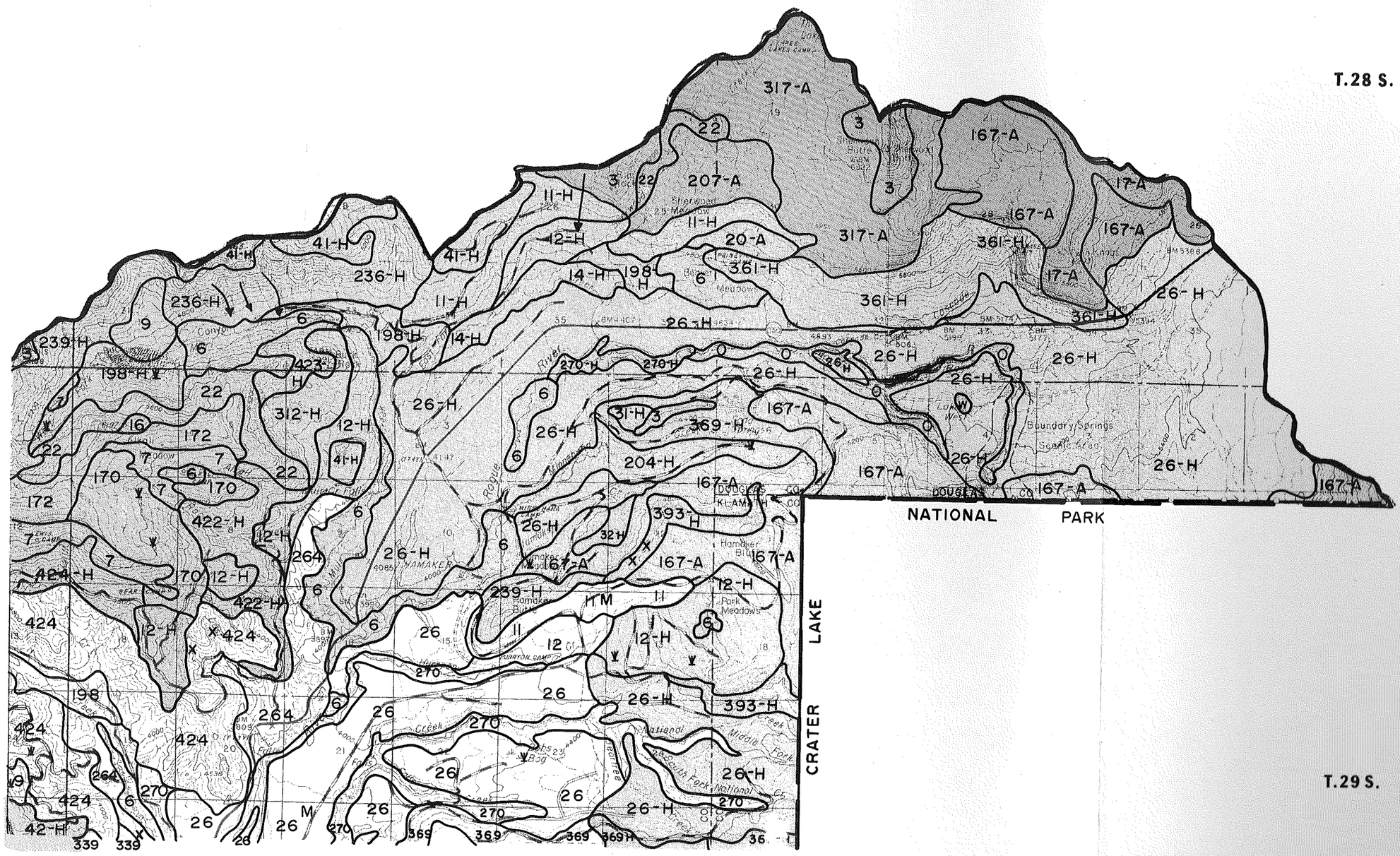

Soils
VICINITY MAP
R.1W.
R.1E.
R.2E.
R.3E.
R.4E.
R.5E.
R.6W.
R.5W.
R.4W.
R.3W.
R.2W.
R.7E.
R.8E.
R.12W.
R.11W.
R.10W.
R.9W.
R.8W.
R.7W.
T.28 S.
T.29 S.
T.30S.
T.31S.
T.32S.
T.33S.
T.34S.
T.35S.
T.36S.
T.37S.
T.38S.
T.39S.
T.40S.
T.41S.
T.19 N.
T.18 N.
T.48N.
T.47N.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
ROGUE RIVER
ROGUE
BLANKETT CR.
PROSPECT R.S.
ELK
ROGUE
BUTTE FALLS R.S.
LITTLE BUTTE CREEK
SOUTH FORK
MEDFORD
APPLEGATE
LITTLE APPLEGATE
BEAR CR.
ASHLAND R.S.
OREGON
CALIFORNIA

# ROGUE RIVER NATIONAL FOREST S R I

R.3 E. R.4 E. R.5 E.

1

T.28 S.




T.29 S.

ONE INCH TO THE MILE

0" 1/2" 1" 2"

SCALE

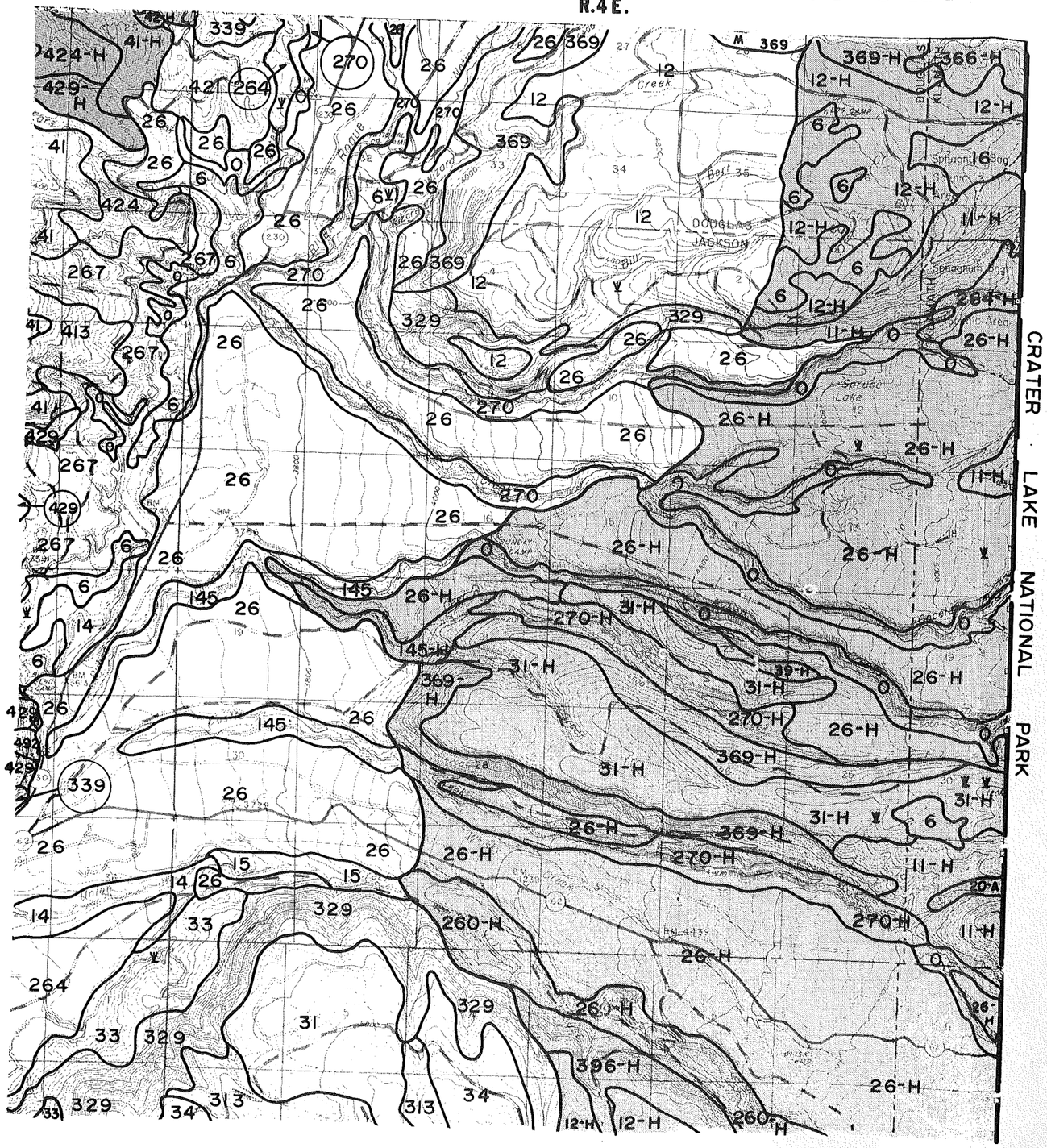
PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

UPPER FOREST ZONE
(U-1)

SUB-ALPINE FOREST ZONE
(A-1)

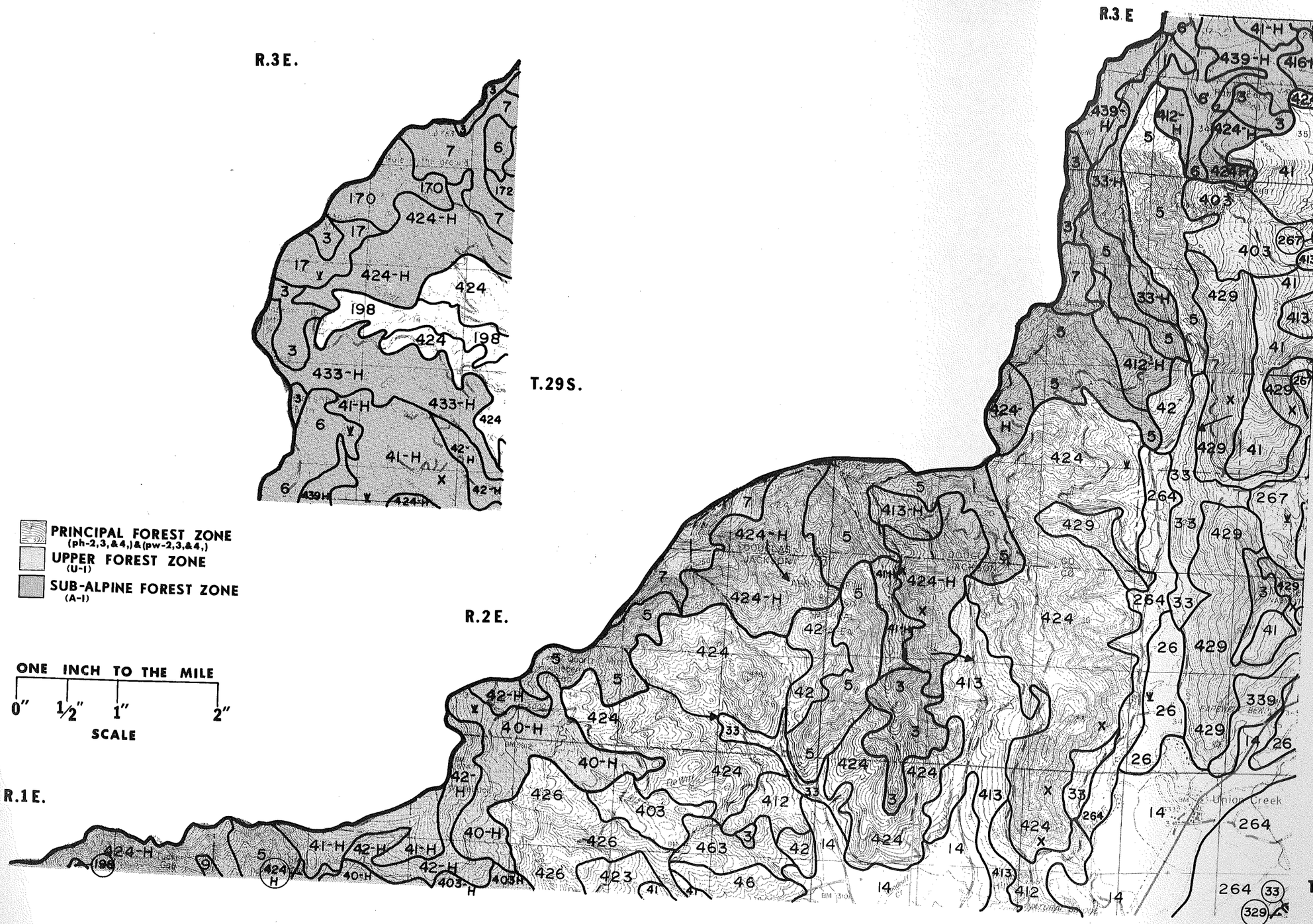
# ROGUE RIVER NATIONAL FOREST S R I

R.4 E.


CRATER LAKE NATIONAL PARK
T. 30 S.
DOUGLAS
JACKSON
Sphagnum Bog
Spruce Lake
Creek
Hill
Butte
Ridge
Mt.
Area
Camp
Ranger Station
Lookout
Boundary
Trail
Road
Ditch
Canal
Flume
Pipeline
Fence
Bridge
Ford
Spring
Well
Tank
Cabin
Corral
Pasture
Fire Guard
Fire Trail
Fire Line
Fire Break
Fire Lookout
Fire Camp
Fire Station
Fire Warden
Fire Patrol
Fire Tower
Fire Road

# ROGUE RIVER NATIONAL FOREST S R I



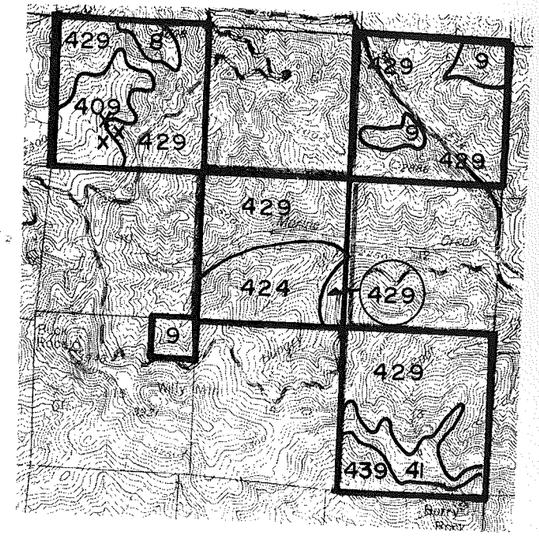


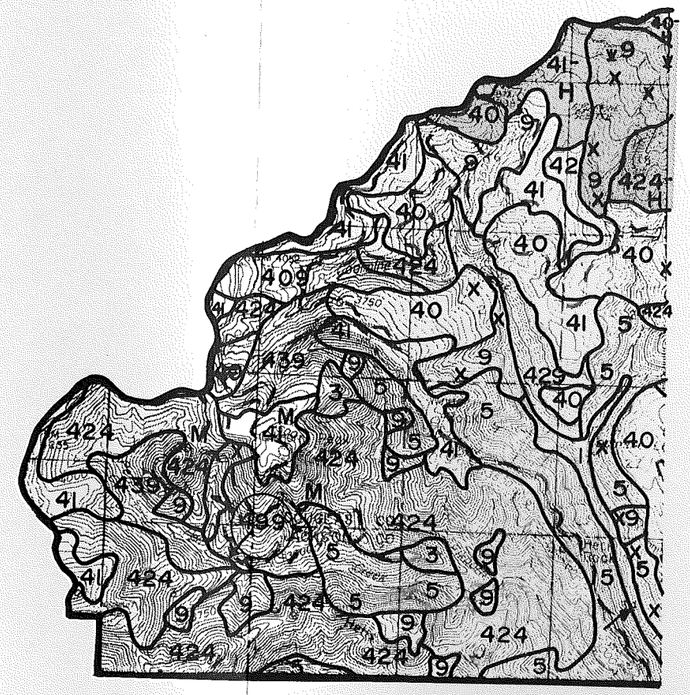
# ROGUE RIVER NATIONAL FOREST S R I

R.1 E.

4

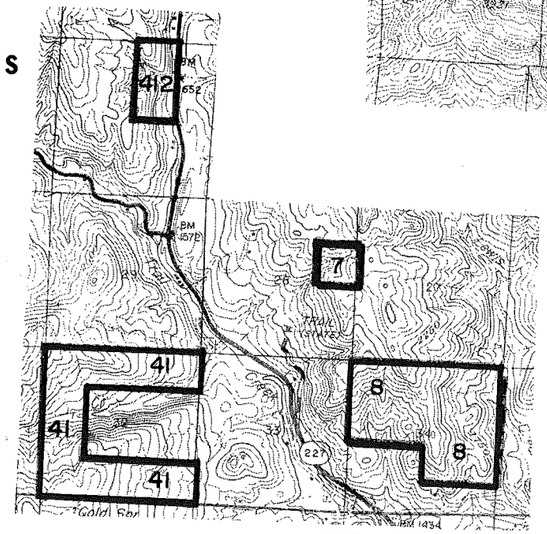
R.1W.




T. 31S.

T.33 S




ONE INCH TO THE MILE

0″ ½″ 1″ 2″

SCALE

PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

UPPER FOREST ZONE
(U-I)

SUB-ALPINE FOREST ZONE
(A-I)

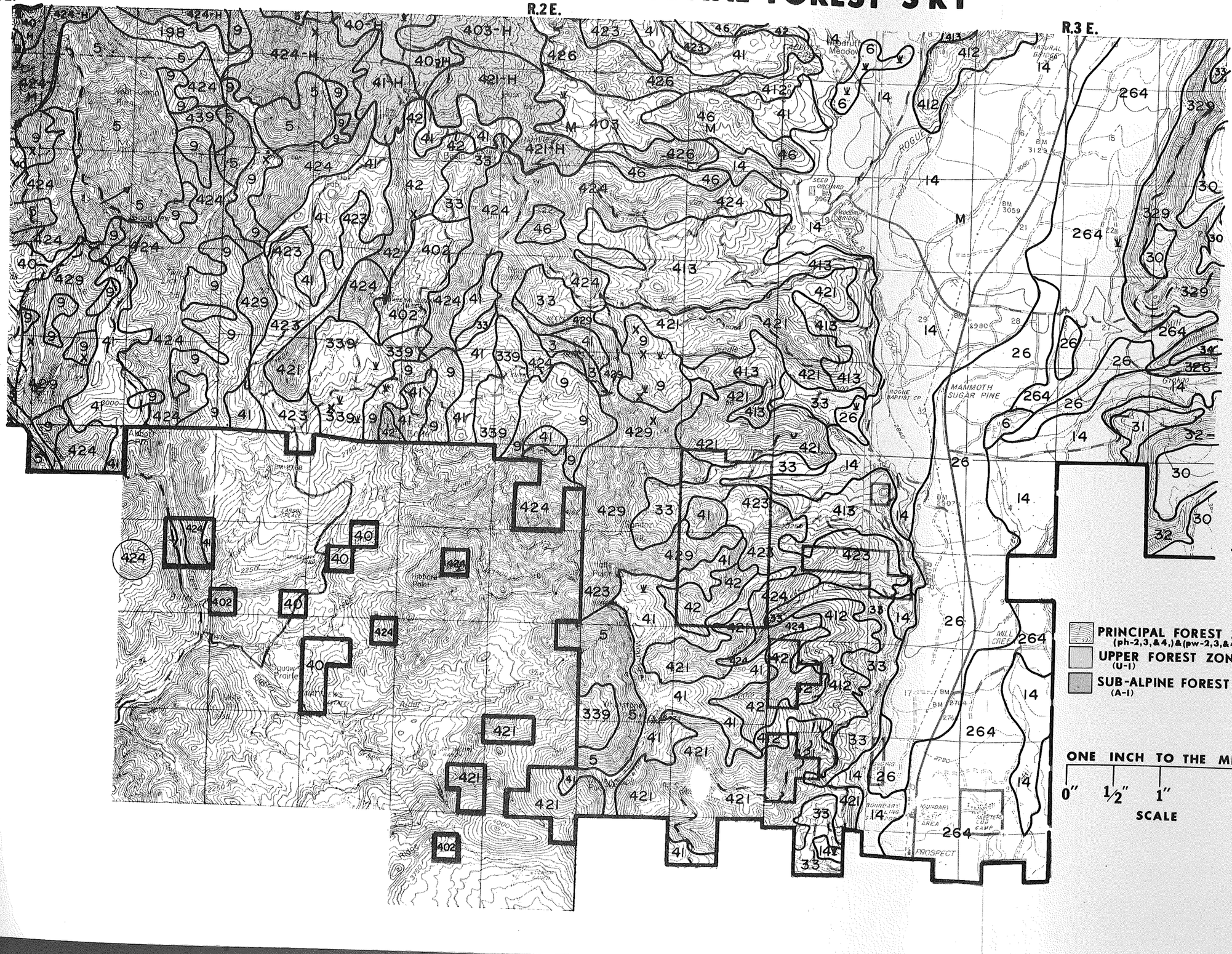
# ROGUE RIVER NATIONAL FOREST S R I

R.1 E. R.2 E. R.3 E.

5

T.31 S.

T.32 S.




PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

UPPER FOREST ZONE
(U-I)

SUB-ALPINE FOREST ZONE
(A-I)

ONE INCH TO THE MILE

0" 1/2" 1" 2"

SCALE

# ROGUE RIVER NATIONAL FOREST S R I



R.4 E.

R.5 E.

T.31 S.

T.32 S.

CRATER LAKE NATIONAL PARK

PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)
UPPER FOREST ZONE
(U-I)
SUB-ALPINE FOREST ZONE
(A-I)

ONE INCH TO THE MILE

0" 1/2" 1" 2"

SCALE

# ROGUE RIVER NATIONAL FOREST S R I

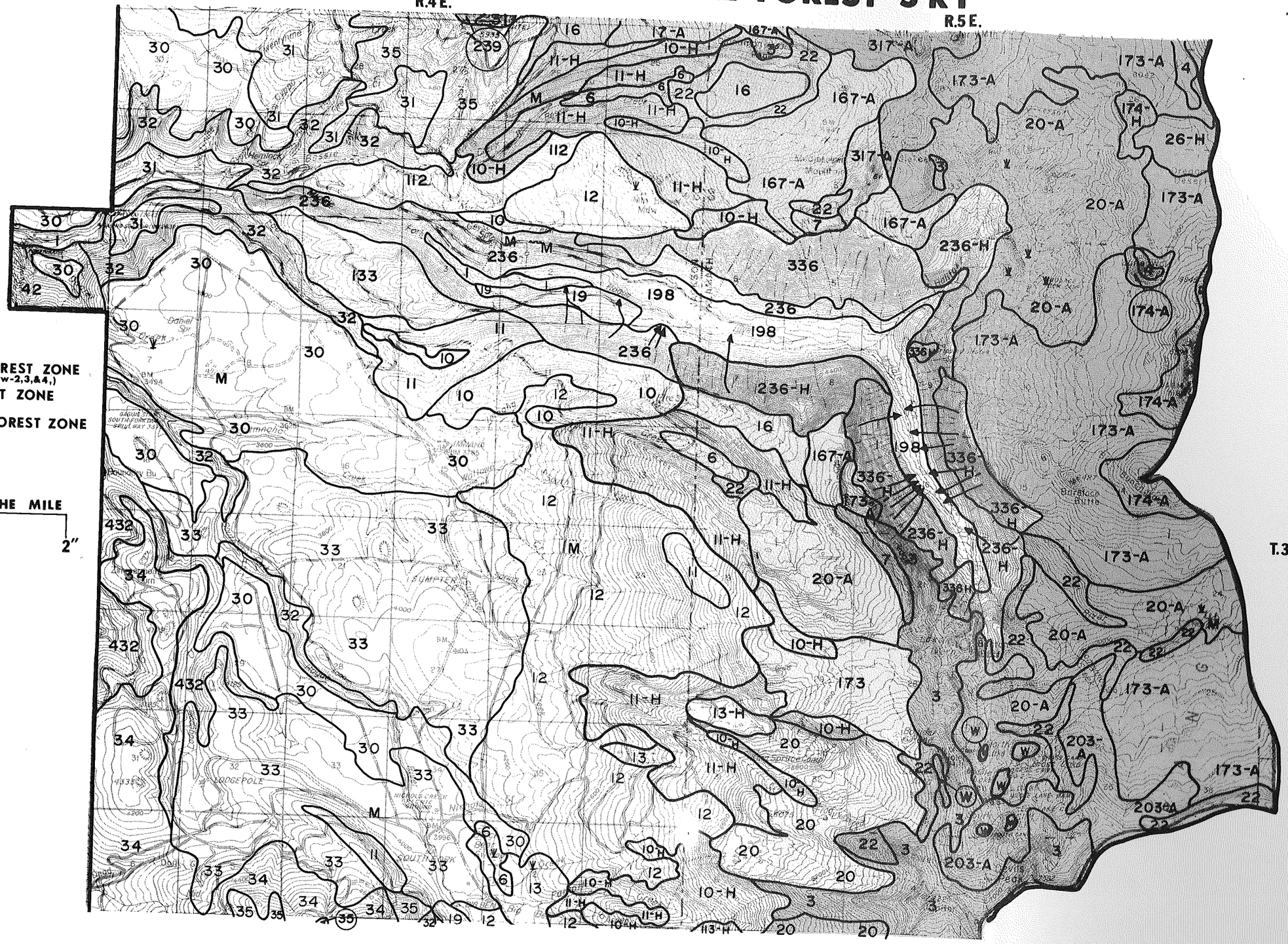
R.4 E.

R.5 E.

T.32 S.

7

T.33 S.



# ROGUE RIVER NATIONAL FOREST S R I



R.4 E.

R.5 E.

T.34 S.

T.35 S.

PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

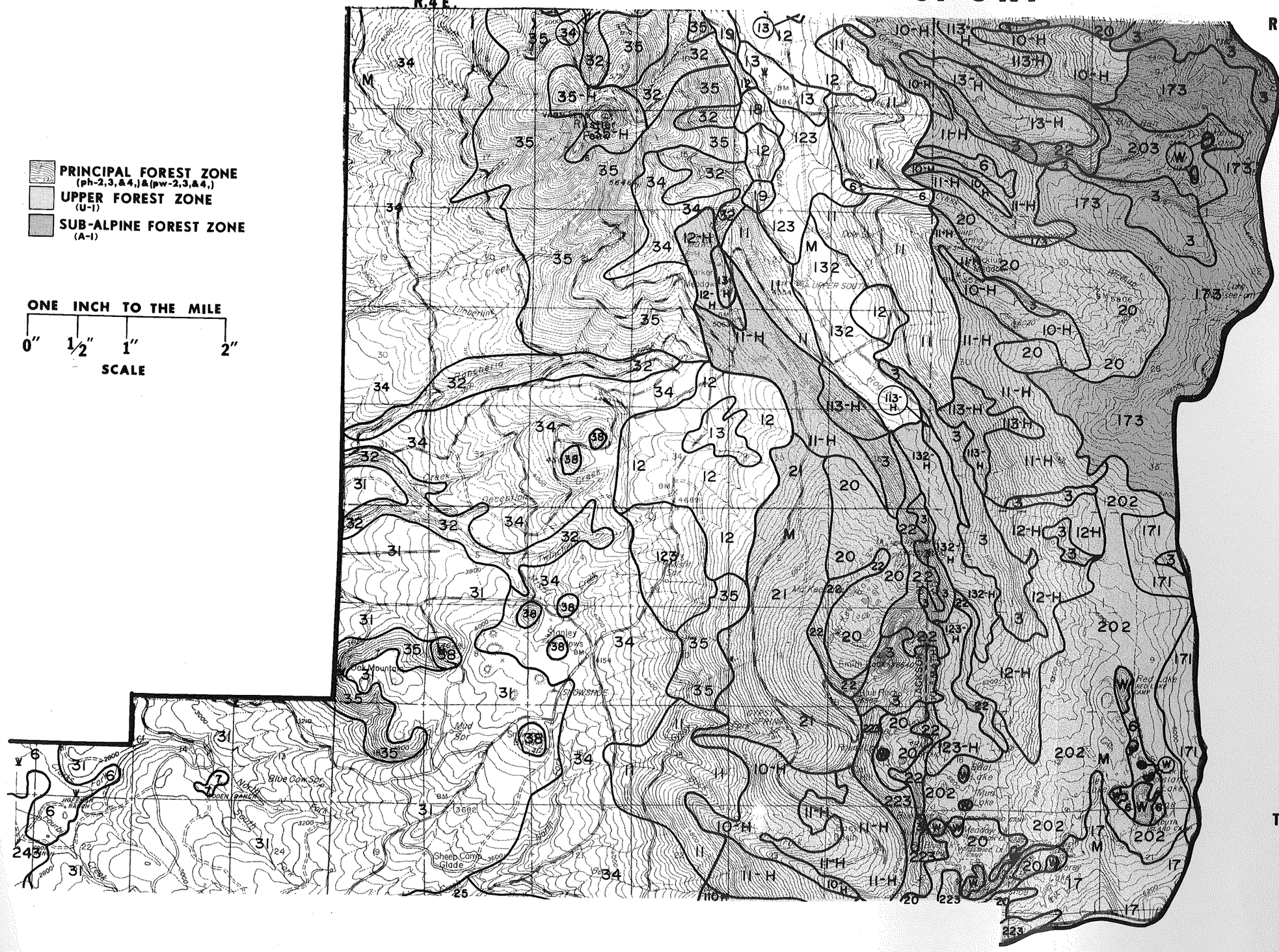
UPPER FOREST ZONE
(U-1)

SUB-ALPINE FOREST ZONE
(A-I)

ONE INCH TO THE MILE

0" 1/2" 1" 2"

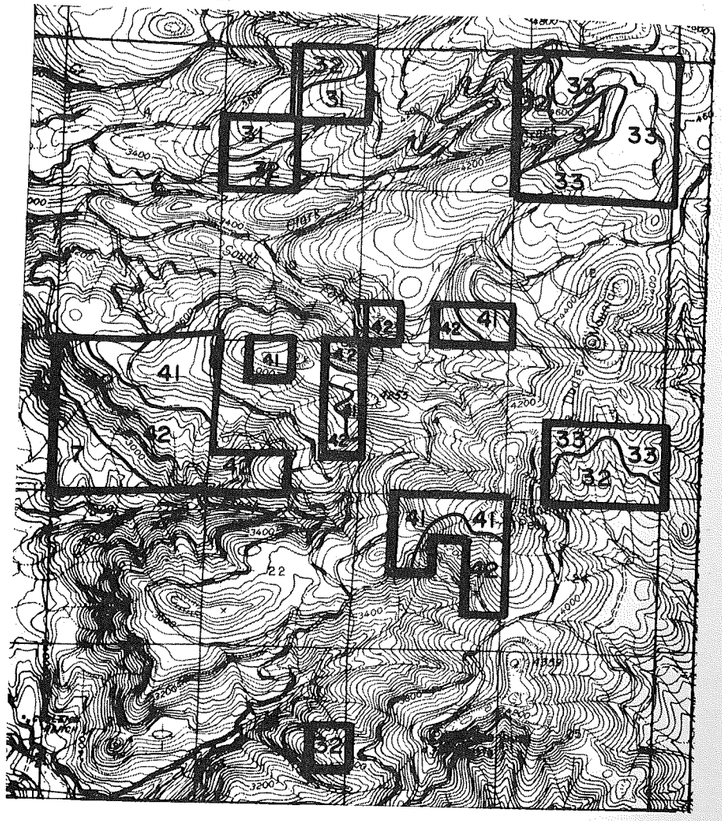
SCALE


Rogue River Forest
Lincoln Creek
Lincoln Spr.
Deception Creek
Twinlakes Spr.
Mud Mountain
Mud Spr.
Snowshoe Spr.
Blue Cow Spr.
Sheep Camp Glade
Hoffman Ranch
Wheeler Ranch
Upper South Fork
Middle Fork
Red Cloud Camp
Blue Lake
Mud Lake
Lake Creek
Lake Creek Camp
Lake Creek Lookout
Lake Creek Trail
Lake Creek Ridge
Lake Creek Meadows
Lake Creek Spr.
Lake Creek Trail Camp
Lake Creek Trail Spr.
Lake Creek Trail Meadows
Lake Creek Trail Ridge
Lake Creek Trail Lookout

# ROGUE RIVER NATIONAL FOREST S R I

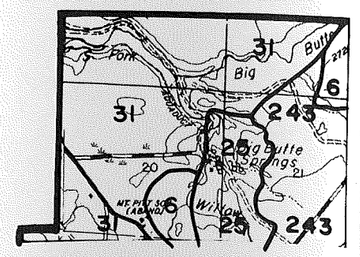


R.2 E.




T.34 S.

R.3E.




T.35 S.

ONE INCH TO THE MILE

0″ ½″ 1″ 2″

SCALE

PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

UPPER FOREST ZONE
(U-1)

SUB-ALPINE FOREST ZONE
(A-1)

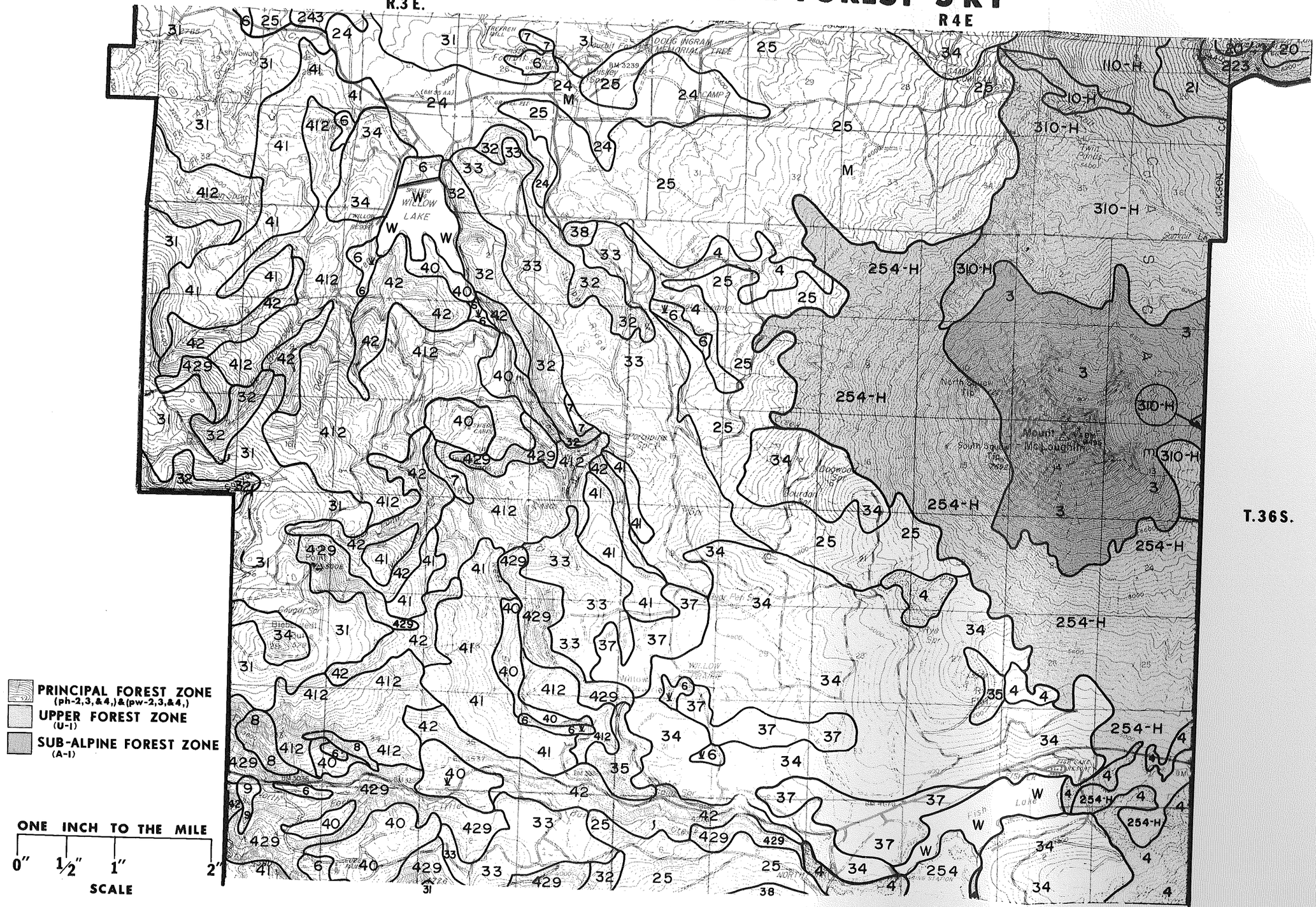
# ROGUE RIVER NATIONAL FOREST S R I

R.3 E.

R4E

10

T.36S.




PRINCIPAL FOREST ZONE
(ph-2,3,&4,)&(pw-2,3,&4,)

UPPER FOREST ZONE
(U-1)

SUB-ALPINE FOREST ZONE
(A-1)

ONE INCH TO THE MILE

0" 1/2" 1" 2"

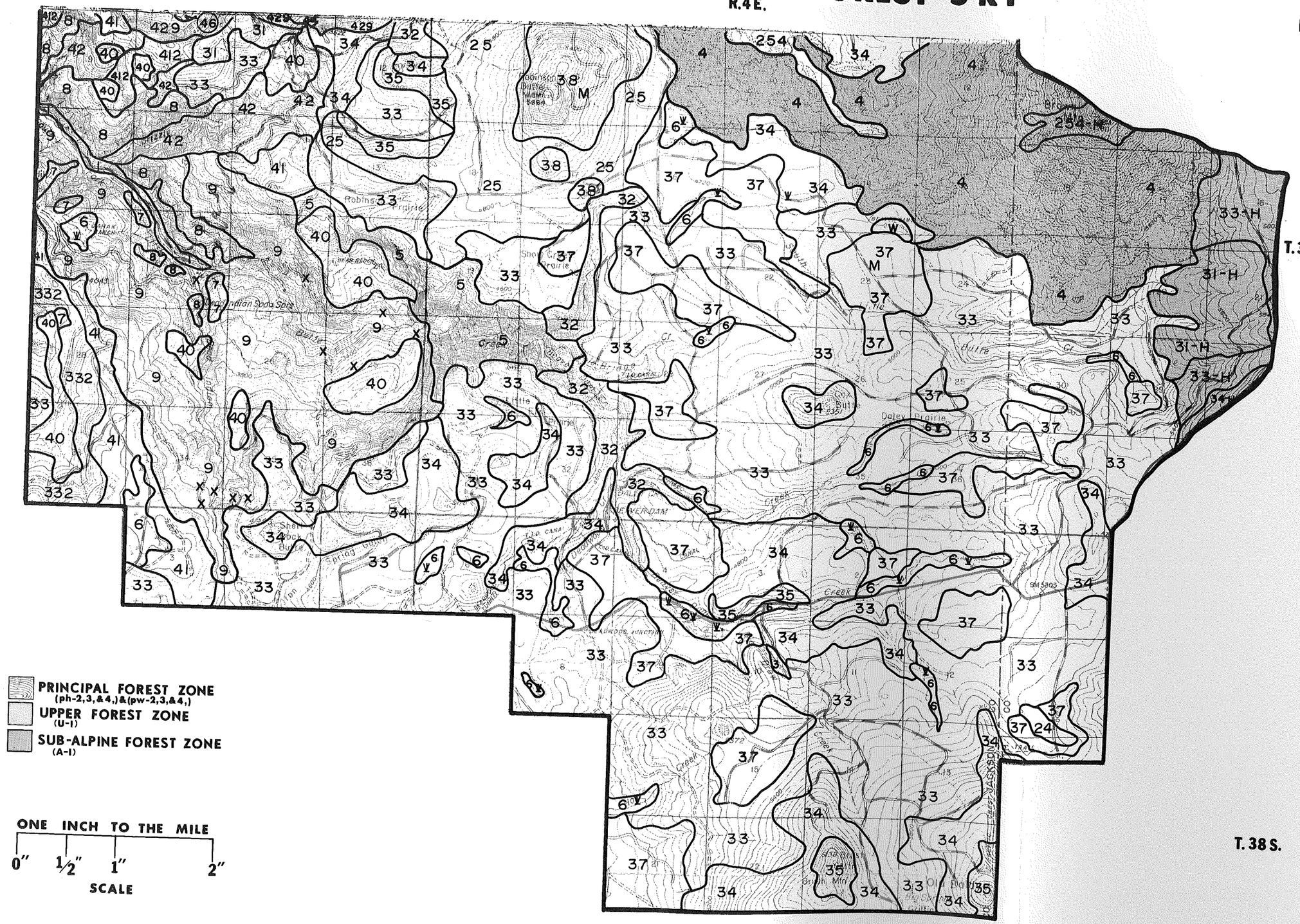
SCALE

# ROGUE RIVER NATIONAL FOREST S R I

R.3 E. R.4 E. R.5 E.

T. 37 S.

T. 38 S.



# SISKIYOU MOUNTAINS

## SISKIYOU PHYSIOGRAPHY

The Klamath Mountains Physiographic Province is comprised of several separate mountain ranges. The major ranges include the Trinity, Salmon, Scott and Marble Mountains in California and the Siskiyou Mountains in Oregon. The Siskiyous are bounded on the west by the Coast Ranges and on the east by the Western Cascades. The Siskiyous are known to contain some of the oldest rocks in the Pacific Northwest. Nearly all of the rocks in the area are altered or metamorphosed to some degree with the exception of the granites and diorites. Rock ages, from youngest to oldest, date from the Jurassic granitoid intrusive rocks, through the Triassic meta-sedimentary and meta-volcanic rocks of the Applegate Group Formation, to the Paleazoic (pre-silurian) schists of the Abrams or Condry Formation. Evidence of fluvial erosion and mass wasting processes is dominant throughout the topography of this province with the effects of glaciation being common to the higher elevations.

The topography of the Siskiyou Ranges is very rugged. Slopes are long, very steep and generally dissected. Most of the major peaks along the crest are between 6,500 and 7,500 feet (1900-2300 m) in elevation while the lower elevations on the Forest begin at about 1,500 feet (460 m).

Streams nearly all have steep gradients and occupy narrow canyons except where glaciation has had a moderating effect upon the topography. Glaciation in the Siskiyous does not appear to have been as widespread as in the High Cascades; however, many high elevation north aspect slopes contain cirques and small cirque basins. Valley glaciers have also been responsible for carving upper portions of several major drainage ways. Streams occupying glacial troughs in their headwater areas include Sturgis Fork, Steve Fork, Middle Fork, Butte Fork and Silver Fork creeks.

In addition to the above mentioned processes, thousands of acres within the Siskiyou portion of the Rogue River National Forest are occupied by large ancient landflows resulting from mass wasting. Many of these surfaces have reached a point of dynamic equilibrium within their respective environments; however, many are also very unstable and represent potential sources of large sediment volumes to waterways and reservoirs. These areas, which have failed in the past, generally tend to have the highest potential for failure in the future.

Topographically, the Siskiyou Mountains comprise the most rugged and complex area to be found on the Rogue River National Forest and quite possibly in the entire Pacific Northwest.

# PHYSIOGRAPHIC PROFILES OF SRI LANDTYPE UNITS

## LANDTYPES ASSOCIATED WITH GLACIAL DEPOSITS, LOCAL SCOURING & LOW COMPETENCY MAFIC & FAULT ZONE MATERIALS

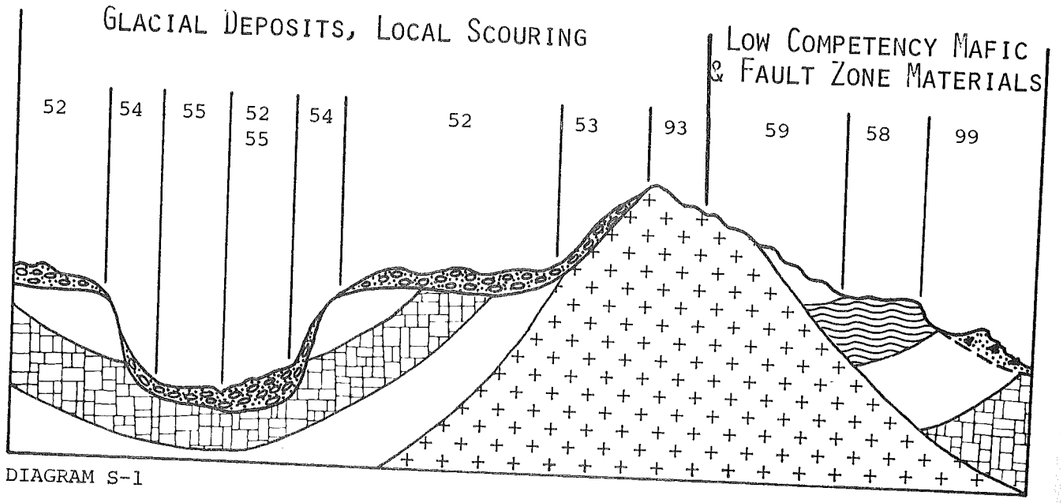



DIAGRAM S-1

## LANDTYPES ASSOCIATED WITH PALEAZOIC GRAPHITE & MICA SCHIST ROCKS

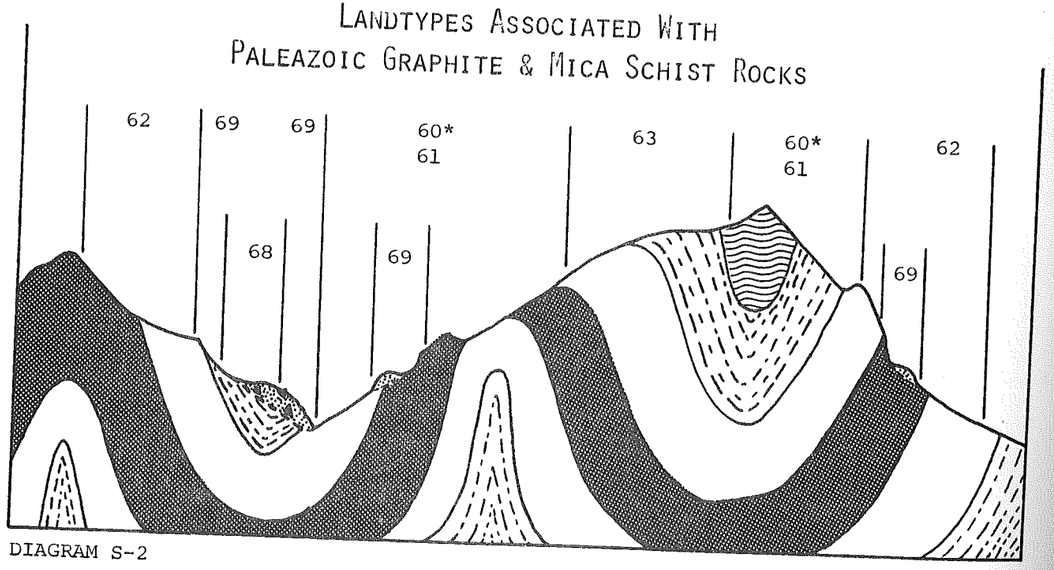



DIAGRAM S-2

* This Landtype contains more than three stream dissections per linear horizontal mile of slope as determined photogrammetrically.



# PHYSIOGRAPHIC PROFILES OF SRI LANDTYPE UNITS

## LANDTYPES ASSOCIATED WITH APPLEGATE GROUP METAMORPHIC ROCKS

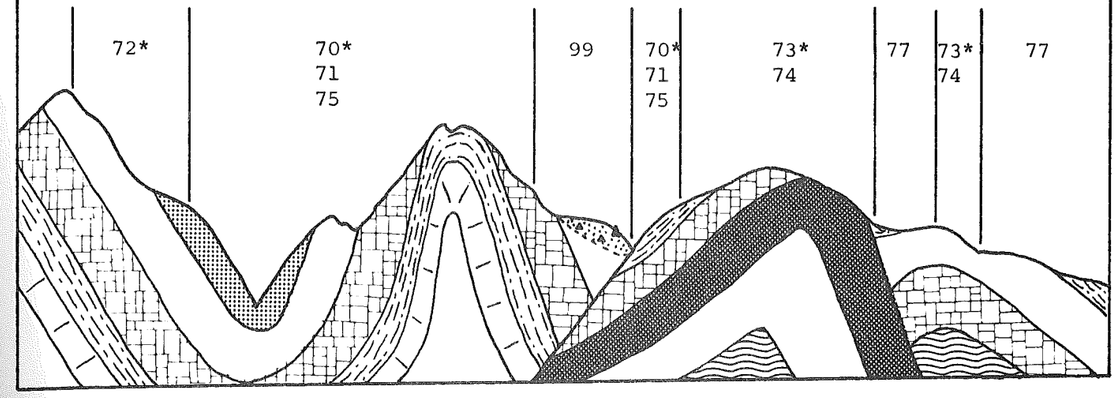



DIAGRAM S-3

## LANDTYPES ASSOCIATED WITH FELSIC INTRUSIVE IGNEOUS ROCKS

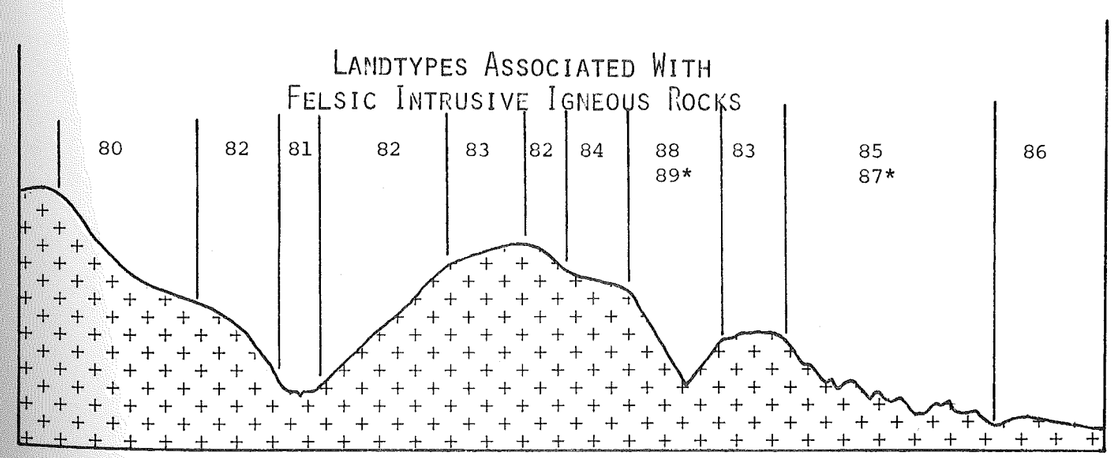



DIAGRAM S-4

* This Landtype contains more than three stream dissections per linear horizontal mile of slope as determined photogrammetrically.

The Siskiyou portions of the Rogue River National Forest are occupied by three major environmental zones. Approximately one quarter of the area is comprised of an Upper Forest Environment while the remaining area is about evenly divided between the Principal and Lower Forest zones. The Sub-Alpine Forest zone is represented, but only along the uppermost portions of the Siskiyou Crest.

Following are the criteria defining each of the three Environmental zones in the Siskiyou portion of the Forest. Each criterion must be allowed a certain degree of flexibility since no single environmental factor can by itself define the greater environment, particularly in the rugged topography of the Siskiyous. The vegetation group listed for an individual environmental zone is designed to be indicative of that particular zone and its overall environmental characteristics. A few vegetative species from each zone, however, are likely to be found locally in other zones where non-typical conditions prevail.

ENVIRONMENTAL ZONES 1/

ZONE-1 (Lower Forest Zone)

| | |
|---|---|
| Dominant Timber Species | PIPO & PSME |
| Precipitation Amount | 20-35" (50-90 cm) |
| Precipitation Form | Rain |
| Soil Moisture Regime (estimated) | XERIC (dry) |
| Soil Temperature Regime (estimated) | MESIC (warm) |
| Elevation Range (elevations vary according to aspect) | 1500-4000' (450-1200 m) |

Vegetation Group

| | |
|---|---|
| conifer species | PIPO, PSME & PIAT (south slopes) |
| hardwoods & shrubs | QUKE, RHDI, ARVI, CECU, GAFR, QUGA & LOHIV |
| herbaceous & groundcover species | GAAP, SIHO, ASBR, SOCA, LUAL, DOAL, GABO & MICA |

ZONE-II (Principal Forest Zone)

| | |
|---|---|
| Dominant Timber Species | PSME & ABCO |
| Precipitation Amount | 35-45" (90-115 cm) |
| Precipitation Form | Rain and wet snow |
| Soil Moisture Regime (estimated) | XERIC (dry) |
| Soil Temperature Regime (estimated) | FRIGID (cool) |
| Elevation Range (elevations vary according to aspect) | 4000 - 5500' (1200-1700 m) |



Vegetation Group

| | |
|---|---|
| conifer species | PSME, ABCO, PILA, PIPO & TABR (moist, shaded areas) |
| hardwoods & shrubs | ACMA, COCO, CONU, BEPI, WHMO, PAMY, ACCI, RILO, RULE, RUPA, RUUR & SAGL |
| herbaceous & groundcover | LINNA, ADBI, CYOC, LAPO, LUAN, TROV, GOOB & GATR |

ZONE III (Upper Forest Zone)

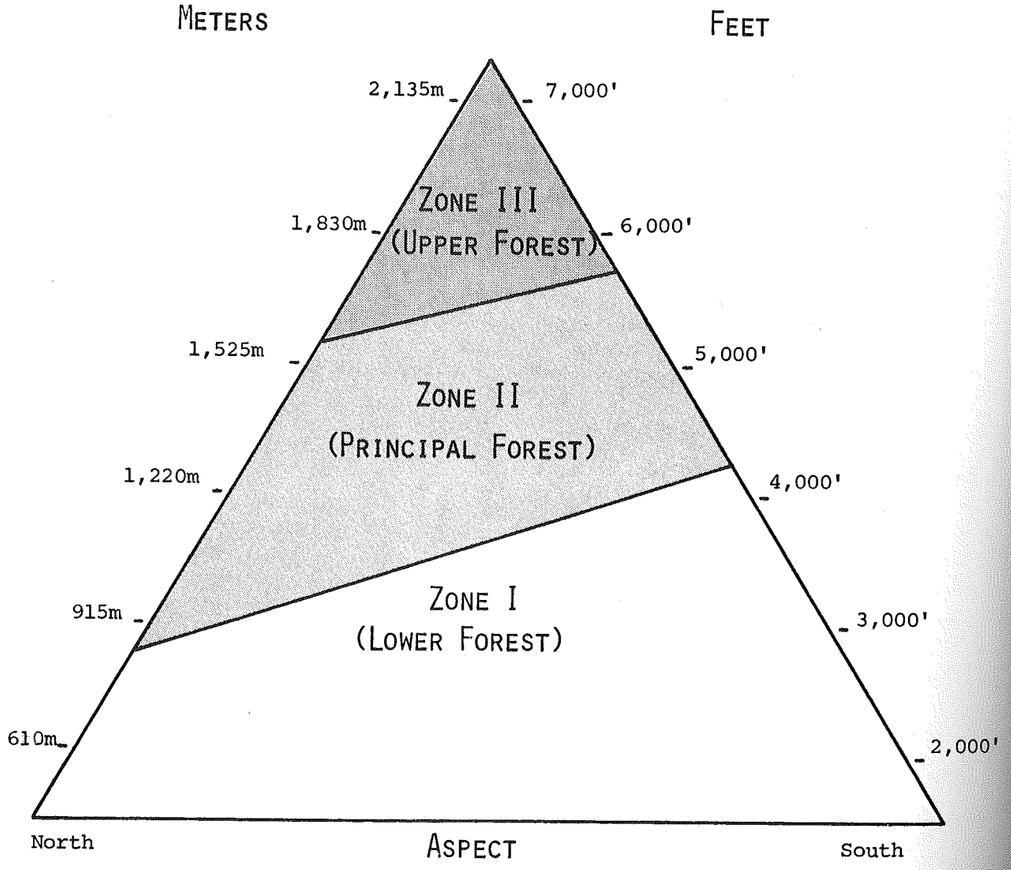
| | |
|---|---|
| Dominant Timber Species | ABMA & ABCO |
| Precipitation Amount | 45-60" (115-150 cm) |
| Precipitation Form | snow (winter) thunderstorms (summer) |
| Soil Moisture Regime (estimated) | UDIC (moist) |
| Soil Temperature Regime (estimated) | CRYIC (cold) |
| Elevation Range | 5500-7500' (1700-2300 m) |

Vegetation Group

| | |
|---|---|
| conifer species | ABMA, ABCO & TSME |
| hardwoods & shrubs | ACGL, RIVI, SARAA, PREM & VAME |
| herbaceous & groundcover species | ARNE, GABI, MITR, POCA, PYPI SMRA, VASI, VECA |

1/ A more detailed analysis of plant communities and ecological habitat types can be found by reviewing the works of Waring and Whittaker. (Refer to Bibliography)

# SISKIYOU
# ENVIRONMENTAL ZONES
# ASPECT
# &
# ELEVATION






SOILS OF THE SISKIYOU MOUNTAINS

RANGE OF PROFILE CHARACTERISTICS

## SOIL 5200

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-7 cm) thick.

**Surface Layers:** Very dark brown to dark brown, very gravelly to very cobbly sandy loams and loams; single grain to weak, fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.6 to 6.6; 10-15 inches (25-40 cm) thick.

**Subsoil Layers:** Dark grayish brown to olive brown, very gravelly to very cobbly sandy loams and loams; massive and sometimes weakly compacted; non-sticky and non-plastit when wet; pH ranges from 5.2 to 5.8; 15-30 inches (40-75 cm) thick.

**Nature of Sub-Stratum:** Moderately to strongly compacted glacial till beginning at a depth of 25-45 inches (65-115 cm).

Soil 5200 is found on Landtypes 52, 53, 54 and 55.

## SOIL 5700

**Litter:** Needles, leaves and twigs in various stages of decomposition, 0-1 inch (10-3 cm) thick.

**Surface Layers:** Very dark grayish brown to dark brown, very cobbly to extremely cobbly loams and silt loams; strong, fine granular blocky structure; slightly sticky and slightly plastic when wet; pH ranges from 6.8 to 7.2; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Brown to dark yellowish brown, very cobbly to extremely cobbly clay loams, loams and silty clay loams; strong, medium sub-angular to angular blocky structure; very sticky and plastic when wet; pH ranges from 6.6 to 7.0; 15-25 inches (40-65 cm) thick.

**Nature of Sub-Stratum:** Moderately hard ultra mafic rock types including serpentine and peridotite beginning at a depth of 24-48 inches (60-120 cm).

Soil 5700 is found on Landtype 57.

## SOIL 5800

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1½ to 2½ inches (4-6.5 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown, gravelly to cobbly loams and clay loams; strong, very fine to medium sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH ranges from 6.4 to 6.8; 10-15 inches (25-40 cm) thick.

**Subsoil Layers:** Reddish brown to yellowish brown, gravelly to very gravelly and very cobbly clay loams and loams; strong, medium sub-angular structure becomming massive with depth; sticky and plastic when wet; pH ranges from 5.2 to 6.4; 30 to 45 inches (75-115 cm) thick.

**Nature of Sub-Stratum:** Soft to moderately hard mafic, ultra-mafic and highly weathered fault zone metamorphic rocks at a depth of 60-96 inches (150-240 cm).

Soil 5800 is found on Landtype 58.

## SOIL 5900

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

**Surface Layers:** Dark brown to dark reddish brown, cobbly to very cobbly loams and clay loams; moderate, fine to very fine sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH ranges from 5.6 to 6.4; 15-20 inches (40-50 cm) thick.

**Subsoil Layers:** Brown to reddish brown, cobbly to very cobbly clay loams; massive to weak, medium sub-angular blocky structure; sticky and plastic when wet; pH ranges from 5.4 to 6.4; 40-80 inches (100-250 cm) thick.

**Nature of Sub-Stratum:** Colluvial deposits from mafic, ultra-mafic and fault zone metamorphic rocks frequently exceeding 120 inches (300 cm) in thickness.

Soil 5900 is found on Landtype 59.





## SOIL 6000

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2½ inches (3-6.5 cm) thick.

**Surface Layers:** Black to very dark grayish brown, very gravelly to extremely gravelly loams and fine, sandy loams; weak to moderate, fine and very fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.2 to 6.0; 5 to 15 inches (10-40 cm) thick.

**Subsoil Layers:** Dark grayish brown to olive gray, very gravelly to extremely gravelly loams and fine sandy loams; single grain to weak medium sub-angular blocky structure; non-sticky and non-plastic when wet; pH ranges from 4.8 to 5.4; 15-30 inches (40-75 cm) thick.

**Nature of Sub-Stratum:** Highly fractured and foliated schists which are primarily graphitic and/or micaceous in composition. Green schist, talc schist and chlorite schist may also occur locally. Depth to these materials ranges from 12-36 inches (30-90 cm).

Soil 6000 is found on Landtypes 60, 61, 62 and 63.

## SOIL 6900

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

**Surface Layers:** Very dark grayish brown to black, very gravelly and extremely gravelly loams, and fine sandy loams; moderate to weak fine granular structure; slightly sticky and non-plastic when wet; pH ranges from 5.8 to 6.4; 10-15 inches (25-40 cm) thick.

**Subsoil Layers:** Dark grayish brown to olive brown, very gravelly to extremely gravelly loams, fine sandy loams and silty clay loams; single grain to massive structure; slightly sticky and slightly plastic when wet; pH ranges from 5.2 to 6.0; 45 inches (115 cm) to more than 80 inches (205 cm) thick.

**Nature of Sub-Stratum:** Unconsolidated colluvial and landslide deposits from graphite and mica schist. Thickness is generally greater than 12 feet (4 m).

Soil 6900 is found on Landtypes 68 and 69.

RANGE OF PROFILE CHARACTERISTICS

SOIL 7000

Litter: Needles, leaves and twigs in various stages of decomposition, 2½ to 3½ inches (6-9 cm) thick.

Surface Layers: Very dark brown to dark brown and very dark grayish brown, very gravelly and cobbly to extremely gravelly and cobbly loams, fine sandy loams and occasionally clay loams; moderate, very fine to medium granular and sub-angular blocky structure; slightly sticky and non-plastic when wet; pH ranges from 5.8 to 6.6; 5-10 inches (10-25 cm) thick.

Subsoil Layers: Dark grayish brown to dark yellowish brown, very gravelly and cobbly to extremely gravelly and cobbly loams and clay loams; strong, medium sub-angular blocky structure becoming massive with depth; slightly sticky and slightly plastic when wet; pH ranges from 5.4 to 6.6; 15 to 30 inches (40-75 cm) thick.

Nature of Sub-Stratum: Hard to moderately hard and locally soft, highly fractured metamorphic rocks of the Applegate Group. Depth to these materials ranges from 24-48 inches (60-120 cm).

Soil 7000 is found on Landtypes 70, 71 and 72.

SOIL 7400

Litter: Needles, leaves and twigs in various stages of decomposition, 1 to 2½ inches (3-4 cm) thick.

Surface Layers: Very dark grayish brown to grayish brown, gravelly loams, loams and light clay loams; moderate to strong fine sub-angular blocky structure; non-sticky to slightly sticky and slightly plastic when wet; pH ranges from 5.8 to 6.6; 10-15 inches (25-40 cm) thick.

Subsoil Layers: Dark brown to olive brown loams, clay loams, gravelly loams and gravelly clay loams; strong, medium to coarse sub-angular blocky structure becoming massive with depth; slightly sticky and slightly plastic to plastic when wet; pH ranges from 5.8 to 6.4; 20-40 inches (50-100 cm) thick.

Nature of Sub-Stratum: Soft to moderately hard and locally hard, highly fractured metamorphic rocks of the Applegate Group. Depth to these materials ranges from 36-60 inches (90-150 cm).

Soil 7400 is found on Landtypes 73 and 74.



RANGE OF PROFILE CHARACTERISTICS

SOIL 7500

Litter: Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

Surface Layers: Very dark brown to brown and very dark grayish brown, extremely gravelly and cobbly loams and sandy loams; moderate to weak, fine to very fine granular structure; non-sticky and non-plastic when wet; pH ranges from 6.0 to 6.8; 5-15 inches (10-40 cm) thick.

Subsoil Layers: Dark grayish brown to dark yellowish brown, extremely gravelly and cobbly loams; single grain to weak, very fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.6 to 6.4; 40-60 inches (100-150 cm) thick.

Nature of Sub-Stratum: Deep colluvium, mainly from metamorphic rocks of the Applegate Group. Depth to bedrock ranges from 6 feet (2 m) to more than 12 feet (4 m).

Soil 7500 is found on Landtype 75 and is frequently an inclusion on Landtypes 70, 71, 72 and 73.

SOIL 7700

Litter: Needles, leaves and twigs in various stages of decomposition; 1 to 2 inches (3-5 cm) thick.

Surface Layers: Dark brown and brown loams, clay loams, gravelly loams and gravelly clay loams; strong to moderate fine sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH ranges from 6.0 to 6.6; 15-20 inches (40-50 cm) thick.

Subsoil Layers: Brown and strong brown, clay loams, clays and gravelly clay loams; strong, medium to coarse sub-angular blocky structure becoming massive with depth; sticky and plastic when wet; pH ranges from 5.4 to 6.2; 25-45 inches (65-115 cm) thick.

Nature of Sub-Stratum: Soft, saprolytic to moderately hard highly fractured metamorphic rocks of the Applegate Group. Depth to these materials ranges from 36-60 inches (90-150 cm).

Soil 7700 is found on Landtype 77.

## SOIL 8000

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2½ to 3½ inches (6-9 cm) thick.

**Surface Layers:** Black to very dark grayish brown, gravelly sandy loams; moderate to weak, very fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.6 to 6.4; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Dark yellowish brown to olive brown, gravelly sandy loams; massive structure; non-sticky and non-plastic when wet; pH ranges from 4.6 to 5.6; 15 to 30 inches (40-75 cm) thick.

**Nature of Sub-Stratum:** Hard to moderately hard quartz diorite at a depth of 24-48 inches (60-120 cm).

Soil 8000 is found on Landtype 80.

## SOIL 8100

**Litter:** Needles, leaves and twigs in various stages of decomposition, 2 to 3 inches (5-8 cm) thick.

**Surface Layers:** Very dark grayish brown to dark brown, very cobbly sandy loams; moderate to weak fine granular structure; non-sticky and non-plastic when wet; pH ranges from 5.8 to 6.4; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Dark yellowish brown to olive brown, very cobbly sandy loams; structureless; non-sticky and non-plastic when wet; pH ranges from 5.0 to 5.8; 30 to 50 inches (75-125 cm) thick.

**Nature of Sub-Stratum:** Quartz diorite colluvial materials from 6 feet (2 m) to 12 feet (4 m) thick.

Soil 8100 is found on Landtypes 81 and 88.





## SOIL 8200

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2½ inches (3-6 cm) thick.

**Surface Layers:** Very dark grayish brown to dark brown, gravelly sandy loams; weak to moderate, fine granular structure; non-sticky and non-plastic when wet; pH ranges from 6.0 to 6.6; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Dark yellowish brown to yellowish brown and olive brown, gravelly sandy loams and loams; structureless; non-sticky and non-plastic when wet; pH ranges from 4.6 to 6.0; 25-45 inches (65-115 cm) thick.

**Nature of Sub-Stratum:** Decomposed quartz diorite, diorite and locally gabbros beginning at a depth of 24-48 inches (60-120 cm).

Soil 8100 is found on Landtypes 82, 83 and 84.

## SOIL 8500

**Litter:** Needles, leaves and twigs in various stages of decomposition, 1 to 2 inches (3-5 cm) thick.

**Surface Layers:** Very dark brown to very dark grayish brown, very gravelly sandy loams; moderate to weak, fine to medium sub-angular blocky structure; non-sticky and non-plastic when wet; pH ranges from 6.0 to 6.8; 5-10 inches (10-25 cm) thick.

**Subsoil Layers:** Dark yellowish brown to olive brown, very gravelly sandy loams and sandy clay loams; structureless; slightly sticky and slightly plastic to plastic when wet; pH ranges from 6.0 to 6.6; 20 to 40 inches (50-100 cm) thick.

**Nature of Sub-Stratum:** Decomposed diorite and gabbros beginning at a depth of 24-60 inches (60-150 cm).

Soil 8500 is found on Landtypes 85 and 87.

RANGE OF PROFILE CHARACTERISTICS

## SOIL 8600

**Litter:** Needles, leaves and twigs in various stages of decomposition.

**Surface Layers:** Dark grayish brown to dark brown, very fine sandy loams, loams and gravelly loams; moderate to strong, medium, sub-angular blocky structure; slightly sticky and slightly plastic when wet; pH ranges from 6.0 to 6.6; 10-15 inches (25-40 cm) thick.

**Subsoil Layers:** Dark reddish brown to brown clay loams and gravelly clay loams; strong, coarse, sub-angular blocky structure; sticky to very sticky and plastic when wet; pH ranges from 6.0 to 6.4; 20-40 inches (50-100 cm) thick.

**Nature of Sub-Stratum:** Decomposed diorite and gabbro beginning at a depth of 50-60 inches (120-150 cm).

Soil 8600 is found on Landtype 86.

## SOIL 8900

**Litter:** Needles, leaves and twigs in various stages of decomposition, ½ to 1½ inches (1-2 cm) thick.

**Surface Layers:** Very dark gray to very dark grayish brown, gravelly sandy loams and sandy loams; weak, fine granular structure; non-sticky and non-plastic when wet; pH ranges from 6.2 to 6.8; 5 to 10 inches (10-25 cm) thick.

**Subsoil Layers:** Dark grayish brown to olive brown, gravelly, sandy loams and sandy loams; structureless; non-sticky and non-plastic when wet; pH ranges from 6.0 to 6.4; 15-25 inches (40-65 cm) thick.

**Nature of Sub-Stratum:** Moderately hard to hard quartz diorite bedrock materials beginning at a depth of 24-48 inches (60-120 cm).

Soil 8900 is found on Landtype 89.

SOIL FERTILITY LAB DATA*

Siskiyou Soils

| Soil # | Depth (cm) | Approximate Elevation (m) | pH | P (ppm) | K (ppm) | Ca (meg/100 g) | Mg (meg/100 g) | Total N (%) | Organic Matter (%) | CEC (meg/100 g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5200 | 0-12 cm | 1350 m | 5.6 | 9 | 100 | 3.4 | 0.59 | 0.15 | 7.58 | 16.97 |
| 5700 | 0-12 cm | 1450 m | 6.5 | 15 | 240 | 7.5 | 16.00 | 0.22 | 9.66 | 32.22 |
| 5800 | 0-12 cm | 1800 m | 6.0 | 8 | 198 | 8.6 | 2.40 | 0.14 | 5.01 | 22.02 |
| 5900 | 0-12 cm | 1350 m | 6.4 | 55 | 320 | 5.9 | 1.10 | 0.10 | 4.24 | 19.60 |
| 6000 | 0-12 cm | 1450 m | 5.9 | 61 | 222 | 3.7 | 0.69 | 0.14 | 5.70 | 15.20 |
| 6900 | 0-12 cm | 1350 m | 6.2 | 107 | 170 | 5.9 | 0.69 | 0.14 | 5.22 | 14.71 |
| 7000 | 0-12 cm | 1400 m | 5.8 | 112 | 180 | 5.1 | 0.59 | 0.10 | 4.14 | 18.80 |
| 7400 | 0-12 cm | 900 m | 5.2 | 21 | 232 | 4.2 | 1.70 | 0.26 | 7.93 | 20.14 |
| 7500 | 0-12 cm | 1250 m | 6.3 | 80 | 330 | 9.5 | 0.69 | 0.16 | 5.25 | 19.33 |
| 7700 | 0-12 cm | 600 m | 6.1 | 68 | 156 | 9.1 | 2.70 | 0.12 | 4.70 | 18.04 |
| 8000 | 0-12 cm | 2000 m | 5.8 | 21 | 128 | 6.6 | 0.92 | 0.26 | 16.34 | 20.51 |
| 8100 | 0-12 cm | 1400 m | 6.7 | 97 | 152 | 8.1 | 0.53 | 0.18 | 7.27 | 18.31 |
| 8200 | 0-12 cm | 1450 m | 5.9 | 42 | 268 | 4.2 | 0.63 | 0.16 | 7.78 | 21.86 |
| 8500 | 0-12 cm | 1100 m | 7.1 | 141 | 604 | 9.3 | 1.40 | 0.08 | 3.52 | 17.24 |
| 8600 | 0-12 cm | 600 m | 6.3 | 35 | 170 | 9.5 | 3.10 | 0.13 | 8.48 | 18.96 |
| 8900 | 0-12 cm | 1150 m | 6.8 | 128 | 208 | 7.4 | 0.89 | 0.15 | 4.59 | 13.32 |

*Analyses were done at the Oregon State University Soils Testing Laboratory, Corvallis, Oregon.

## Report of Laboratory Test Results

### SOIL 5200

Depth: 10-30" Unified: SM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 133.1

Optimum moisture - % 9.1

Specific gravity, #10(-) only 2.99

California Bearing Ratio: 95% = 8
90% = 2
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0308 | 11.8 |
| 0.0207 | 9.0 |
| 0.0123 | 6.8 |
| 0.0083 | 6.0 |
| 0.0062 | 5.0 |
| 0.0030 | 2.7 |
| 0.0013 | 1.5 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 99.7 |
| 2" | 99.5 |
| 1½" | 99.0 |
| 1" | 96.4 |
| 3/4" | 93.3 |
| 1/2" | 86.3 |
| 3/8" | 81.8 |
| #4 | 67.3 |
| #10 | 51.1 |
| #20 | 42.9 |
| #40 | 38.6 |
| #60 | 35.2 |
| #100 | 30.8 |
| #200 | 22.9 |

Nonplastic, silty sand, poor drainage, slight compressibility. Reasonably stable for fill when dense, good as subgrade when not subject to frost action.

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### SOIL 5700

Depth: 10-20" Unified: GC AASHO: A-2-7
Liquid Limit: 53 Plasticity Index: 13

Maximum density - p.c.f. 108.4

Optimum moisture - % 20.0

Specific gravity, #10(-) only 2.74

California Bearing Ratio: 95% =
90% = No information
85% =

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0322 | 21.1 |
| 0.0213 | 17.7 |
| 0.0127 | 15.0 |
| 0.0086 | 12.7 |
| 0.0065 | 10.8 |
| 0.0032 | 6.8 |
| 0.0014 | 3.8 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 97.9 |
| 2½" | 96.7 |
| 2" | 95.3 |
| 1½" | 93.4 |
| 1" | 88.5 |
| 3/4" | 83.0 |
| 1/2" | 73.0 |
| 3/8" | 66.4 |
| #4 | 48.8 |
| #10 | 37.2 |
| #20 | 34.0 |
| #40 | 31.6 |
| #60 | 29.9 |
| #100 | 28.1 |
| #200 | 25.7 |

Slightly plastic, clayey gravel, poorly drained, slight compressibility. Reasonably stable infill, good subgrade; good base course if <u>not</u> subject to frost action.



## Report of Laboratory Test Results

### SOIL 5800

Depth: 15-40" Unified: SMa AASHO: A-4-0
Liquid Limit: 39 Plasticity Index: 5

Maximum density - p.c.f. 99.4

Optimum moisture - % 24.0

Specific gravity, #10(-) only 2.91

California Bearing Ratio: 95% = 5
90% = 3
85% = 2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0258 | 37.07 |
| 0.0174 | 31.04 |
| 0.0104 | 26.72 |
| 0.0075 | 25.00 |
| 0.0054 | 22.41 |
| 0.0027 | 18.10 |
| 0.0012 | 14.79 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 1½" | 100 |
| 1" | 95 |
| 3/4" | 92 |
| 1/2" | 90 |
| 3/8" | 88 |
| #4 | 81 |
| #10 | 74 |
| #20 | 70 |
| #40 | 65 |
| #60 | 60 |
| #100 | 54 |
| #200 | 45.2 |

Slightly plastic, silty sand, poorly drained, slight compressibility, relatively high liquid limit makes it less than desirable for construction.

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### SOIL 5900

Depth: 15-30" Unified: GMd AASHO: A-4-0
Liquid Limit: 27 Plasticity Index: 4

Maximum density - p.c.f. 116.7

Optimum moisture - % 14.6

Specific gravity, #10(-) only 2.84

California Bearing Ratio: 95% = 5
90% = 2
85% = <1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0235 | 32.53 |
| 0.0164 | 27.14 |
| 0.0104 | 21.16 |
| 0.0077 | 17.57 |
| 0.0056 | 15.18 |
| 0.0029 | 10.99 |
| 0.0013 | 5.70 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 2" | 100 |
| 1½" | 98 |
| 1" | 92 |
| 3/4" | 87 |
| 1/2" | 83 |
| 3/8" | 80 |
| #4 | 69 |
| #10 | 57 |
| #20 | 51 |
| #40 | 48 |
| #60 | 46 |
| #100 | 45 |
| #200 | 43.1 |

Slightly plastic, sandy gravelly silt, slight compressibility, poorly drained. Reasonably stable in fill, good as subgrade when not subject to frost.

## Report of Laboratory Test Results

### SOIL 6000

Depth: 10-25" Unified: GMn AASHO: A-1-b
Liquid Limit: 31 Plasticity Index: NP

Maximum density - p.c.f. 114.9

Optimum moisture - % 12.4

Specific gravity, #10(-) only 2.73

California Bearing Ratio: 95% = 10
90% = 5
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0272 | 18.19 |
| 0.0182 | 15.60 |
| 0.0111 | 12.92 |
| 0.0081 | 10.77 |
| 0.0059 | 8.61 |
| 0.0030 | 5.17 |
| 0.0013 | 2.65 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2" | 89 |
| 1½" | 82 |
| 1" | 78 |
| 3/4" | 75 |
| 1/2" | 71 |
| 3/8" | 68 |
| #4 | 57 |
| #10 | 45 |
| #20 | 38 |
| #40 | 33 |
| #60 | 30 |
| #100 | 27 |
| #200 | 21.8 |

Nonplastic, silty sandy gravel, poor drainage, slight compressibility. Reasonably stable in fill, good as subgrade when not subject to frost; fair as base course if insulated.

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### SOIL 6900

Depth: 15-40" Unified: GM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 114.6

Optimum moisture - % 14.0

Specific gravity, #10(-) only 2.78

California Bearing Ratio: 95% = 20
90% = 9
85% = 3

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 13.6 |
| 0.020 | 11.6 |
| 0.012 | 9.4 |
| 0.008 | 7.9 |
| 0.006 | 6.3 |
| 0.003 | 3.5 |
| 0.001 | 1.6 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 8" | 100 |
| 5" | 94.0 |
| 3" | 90.9 |
| 2½" | 88.1 |
| 2" | 85.6 |
| 1½" | 79.7 |
| 1" | 77.7 |
| 3/4" | 74.2 |
| 1/2" | 68.8 |
| 3/8" | 66.4 |
| #4 | 55.3 |
| #10 | 41.3 |
| #20 | 33.4 |
| #40 | 29.8 |
| #60 | 26.9 |
| #100 | 23.1 |
| #200 | 17.7 |

Nonplastic, silty gravel, poorly drained, slightly expansive. Reasonably stable as fill material, good as subgrade when protected from frost action, fair as base course.



## Report of Laboratory Test Results

### SOIL 7000

Depth: 10-20" Unified: GM AASHO: A-1-b
Liquid Limit: 33 Plasticity Index: 2

Maximum density - p.c.f. 114.4

Optimum moisture - % 14.1

Specific gravity, #10(-) only 10

California Bearing Ratio: 95% = 10
90% = 4
85% = 2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.029 | 20.8 |
| 0.019 | 18.5 |
| 0.012 | 16.3 |
| 0.008 | 14.6 |
| 0.006 | 12.5 |
| 0.003 | 7.1 |
| 0.001 | 3.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 99.8 |
| 2" | 99.5 |
| 1½" | 99.0 |
| 1" | 96.7 |
| 3/4" | 94.5 |
| 1/2" | 90.8 |
| 3/8" | 87.1 |
| #4 | 71.3 |
| #10 | 49.1 |
| #20 | 39.0 |
| #40 | 33.9 |
| #60 | 30.7 |
| #100 | 28.0 |
| #200 | 25.0 |

Very slightly plastic, gravelly sand, poorly drained, slightly compressive. Reasonably stable as fill, will make a good subgrade or fair as base course.

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### SOIL 7400

Depth: 15-40" Unified: CL-ML AASHO: A-4-4
Liquid Limit: 26 Plasticity Index: 6

Maximum density - p.c.f. 121.2

Optimum moisture - % 9.0

Specific gravity, #10(-) only 2.72

California Bearing Ratio: 95% = 8
90% = 4
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0265 | 41.56 |
| 0.0183 | 33.10 |
| 0.0115 | 22.98 |
| 0.0085 | 17.46 |
| 0.0061 | 14.70 |
| 0.0031 | 10.11 |
| 0.0013 | 6.58 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3/4" | 100 |
| 1/2" | 99 |
| 3/8" | 97 |
| #4 | 86 |
| #10 | 71 |
| #20 | 64 |
| #40 | 60 |
| #60 | 58 |
| #100 | 56 |
| #200 | 54.0 |

Slightly plastic, silt clay of medium compressibility, poor to no drainage. Poor stability may require high density in fills, poor as subgrade.

## Report of Laboratory Test Results

### SOIL 7500

Depth: 10-25" Unified: GM AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 113.7

Optimum moisture - % 15.1

Specific gravity, #10(-) only 2.83

California Bearing Ratio: 95% = 20
90% = 10
85% = 5

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 7.0 |
| 0.020 | 5.9 |
| 0.012 | 4.7 |
| 0.008 | 4.2 |
| 0.006 | 3.6 |
| 0.003 | 2.5 |
| 0.001 | 1.6 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 8" | 100 |
| 5" | 82.9 |
| 3" | 71.1 |
| 2½" | 64.0 |
| 2" | 56.0 |
| 1½" | 45.7 |
| 1" | 38.7 |
| 3/4" | 35.8 |
| 1/2" | 31.9 |
| 3/8" | 30.1 |
| #4 | 26.6 |
| #10 | 22.8 |
| #20 | 20.9 |
| #40 | 18.9 |
| #60 | 17.1 |
| #100 | 14.7 |
| #200 | 10.8 |

Nonplastic, silty gravel, fair drainage, slightly expansive. Reasonably stable as fill, good as subgrade. Slightly susceptable to frost, fair as base course.

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### SOIL 7700

Depth: 18-40" Unified: CL AASHO: A-6
Liquid Limit: 33.4 Plasticity Index: 10.9

Maximum density - p.c.f. 109.5

Optimum moisture - % 18.8

Specific gravity, #10(-) only 2.80

California Bearing Ratio: 95% = 3
90% = 1
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.028 | 54.5 |
| 0.019 | 50.0 |
| 0.011 | 43.6 |
| 0.008 | 39.3 |
| 0.006 | 34.5 |
| 0.003 | 27.2 |
| 0.001 | 18.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.8 |
| 3/4" | 99.5 |
| 1/2" | 98.2 |
| 3/8" | 97.8 |
| #4 | 93.1 |
| #10 | 89.2 |
| #20 | 83.6 |
| #40 | 77.8 |
| #60 | 73.5 |
| #100 | 69.6 |
| #200 | 64.3 |

Slightly plastic, sandy clay of medium compressibility; impervious. Good stability as embankment, fair as subgrade.



## Report of Laboratory Test Results

### SOIL 8000

Depth: 10-30" Unified: SM AASHO: A-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 86.2

Optimum moisture - % 29.0

Specific gravity, #10(-) only 2.64

California Bearing Ratio: 95% = 5
90% = 3
85% = 2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.029 | 37.8 |
| 0.020 | 33.2 |
| 0.012 | 30.0 |
| 0.008 | 27.5 |
| 0.006 | 25.0 |
| 0.003 | 19.2 |
| 0.001 | 12.9 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 99.8 |
| 2" | 99.5 |
| 1½" | 99.1 |
| 1" | 98.6 |
| 3/4" | 97.9 |
| 1/2" | 96.1 |
| 3/8" | 94.8 |
| #4 | 90.0 |
| #10 | 78.5 |
| #20 | 71.9 |
| #40 | 63.8 |
| #60 | 57.1 |
| #100 | 51.1 |
| #200 | 44.6 |

Nonplastic, silty sand, poorly drained, slight compressibility. Frost susceptable, reasonably stable in fill when dense. Fair as subgrade, not subject to frost.

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### SOIL 8100

Depth: 10-40" Unified: GM AASHO: A-1-a
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 114.1

Optimum moisture - % 13.0

Specific gravity, #10(-) only 2.66

California Bearing Ratio: 95% = 10
90% = 5
85% = 3

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.035 | 6.9 |
| 0.023 | 6.1 |
| 0.014 | 5.0 |
| 0.009 | 4.5 |
| 0.007 | 3.8 |
| 0.003 | 2.4 |
| 0.001 | 1.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 72.9 |
| 2½" | 69.4 |
| 2" | 67.3 |
| 1½" | 64.9 |
| 1" | 63.3 |
| 3/4" | 62.0 |
| 1/2" | 60.0 |
| 3/8" | 57.8 |
| #4 | 50.0 |
| #10 | 41.2 |
| #20 | 34.9 |
| #40 | 28.2 |
| #60 | 21.4 |
| #100 | 15.1 |
| #200 | 9.6 |

Nonplastic, silty gravel, fair drainage slightly expansive. Reasonably stable as fill. Good as subgrade, slightly susceptable to frost, fair as base course.

## Report of Laboratory Test Results

### SOIL 8200

Depth: 10-30" Unified: SM AASHO: A-5
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 105.9

Optimum moisture - % 19.2

Specific gravity, #10(-) only 2.69

California Bearing Ratio: 95% = 14
90% = 6
85% = 2

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.030 | 28.3 |
| 0.020 | 24.1 |
| 0.012 | 20.7 |
| 0.008 | 18.2 |
| 0.006 | 15.6 |
| 0.003 | 11.4 |
| 0.001 | 7.4 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 5" | 100 |
| 3" | 88.7 |
| 2½" | 87.3 |
| 2" | 86.6 |
| 1½" | 85.5 |
| 1" | 84.3 |
| 3/4" | 83.4 |
| 1/2" | 82.5 |
| 3/8" | 81.7 |
| #4 | 79.6 |
| #10 | 73.6 |
| #20 | 69.9 |
| #40 | 65.0 |
| #60 | 60.0 |
| #100 | 53.7 |
| #200 | 43.4 |

Nonplastic, sandy silt, poorly drained, slight compressiblity. Reasonably stable when dense. Will make fair subgrade when not subject to frost.

### SOIL 8500

Depth: 10-40" Unified: SM AASHO: A-2-4
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 123.7

Optimum moisture - % 11.9

Specific gravity, #10(-) only 2.85

California Bearing Ratio: 95% = 12
90% = 4
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.032 | 16.9 |
| 0.021 | 13.2 |
| 0.013 | 10.1 |
| 0.008 | 7.7 |
| 0.006 | 6.3 |
| 0.003 | 4.0 |
| 0.001 | 2.2 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | 100 |
| 2½" | 99.4 |
| 2" | 98.7 |
| 1½" | 98.8 |
| 1" | 97.6 |
| 3/4" | 97.4 |
| 1/2" | 96.5 |
| 3/8" | 95.9 |
| #4 | 95.0 |
| #10 | 79.6 |
| #20 | 66.6 |
| #40 | 54.9 |
| #60 | 45.0 |
| #100 | 36.1 |
| #200 | 26.4 |

Nonplastic, silty sand, poorly drained, slightly expansive. Reasonably stable as fill when dense. Fair as subgrade if not subject to frost action.



## Report of Laboratory Test Results

### SOIL 8600

Depth: 20-40" Unified: CL-ML AASHO: A-4-0
Liquid Limit: 23 Plasticity Index: 4

Maximum density - p.c.f. 114.4

Optimum moisture - % 16.7

Specific gravity, #10(-) only 2.83

California Bearing Ratio: 95% = 4
90% = 2
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.0264 | 43.01 |
| 0.0178 | 36.22 |
| 0.0108 | 30.41 |
| 0.0077 | 28.47 |
| 0.0056 | 24.59 |
| 0.0028 | 21.68 |
| 0.0012 | 16.99 |

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2" | |
| 1½" | |
| 1" | |
| 3/4" | |
| 1/2" | 100 |
| 3/8" | 99.8 |
| #4 | 99 |
| #10 | 97 |
| #20 | 91 |
| #40 | 83 |
| #60 | 78 |
| #100 | 73 |
| #200 | 65.2 |

Slightly plastic, sandy silt, medium compressibility, poor drainage. High density required for stability in fills, frost susceptable.

### SOIL 8900

Depth: 10-30" Unified: SM AASHO: A-1-b
Liquid Limit: 0 Plasticity Index: NP

Maximum density - p.c.f. 121.2

Optimum moisture - % 11.1

Specific gravity, #10(-) only 2.77

California Bearing Ratio: 95% = 14
90% = 6
85% = 1

Hydrometer Analysis

| Diameter MM 1/ | Percent Finer Than |
|---|---|
| 0.033 | 10.8 |
| 0.022 | 8.5 |
| 0.013 | 6.2 |
| 0.009 | 5.6 |
| 0.007 | 4.3 |
| 0.003 | 2.6 |
| 0.001 | 1.3 |

1/ Partical size computed from Hydrometer readings.

Mechanical Analysis

| Sieve Size | % Passing |
|---|---|
| 3" | |
| 2½" | |
| 2" | |
| 1½" | 100 |
| 1" | 99.8 |
| 3/4" | 99.8 |
| 1/2" | 99.6 |
| 3/8" | 99.4 |
| #4 | 92.4 |
| #10 | 66.1 |
| #20 | 50.3 |
| #40 | 39.7 |
| #60 | 32.8 |
| #100 | 26.2 |
| #200 | 18.3 |

Nonplastic, silty sand, poorly drained, slightly compressive. Reasonably stable in fill when dense. Will make fair subgrade if protected from frost.

## LANDTYPE UNIT 52

Landtype unit 52 consists dominantly of Landtype 52 and minor amounts of Landtypes 71, 75, 82, 54 and 55.

The major soil profile type found on this Landtype is number 5200. Soils on Landtype 52 are comprised of sandy loams and loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, sub-soil layers 15-30 inches (40-75 cm) in thickness and contain 35-65 percent gravel and cobble. Soils are forming in glacial till and are well to excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock ranges from 6 to 12+ feet (2-4 m) beneath compacted glacial till.

Typically, Landtype 52 is associated with rounded, high elevation gentle to moderately steep, smooth, glacial depositional surfaces with slopes ranging from 15-45 percent. Stability Class I.

This Landtype occurs primarily in Environmental Zones II and III.

## LANDTYPE UNIT 53

Landtype unit 53 consists dominantly of Landtype 53 and minor amounts of Landtypes 72, 52, 54, 80 and 75.

The major soil profile type occurring on this Landtype is number 5200. Soils on Landtype 53 are comprised of sandy loams and loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 35-65 percent gravel and cobble. Soils are forming in glacial till and are well to excessively drained.

Bedrock materials are undifferentiated. Depth to bedrock ranges from 6 to 12+ feet (2-4 m) beneath compacted glacial till.

Typically, Landtype 53 is associated with smooth, sideslope glacial depositional surfaces associated with steep, concave cirque basins and headwall areas with slopes ranging from 45-70 percent. Stability Class II.

This Landtype occurs primarily in Environmental Zones II and III.



## LANDTYPE UNIT 54

Landtype 54 consists dominantly of Landtype 54 and minor amounts of Landtypes 75, 85, 50, 93 and 55.

The major soil profile type occurring on this Landtype is number 5200. Soils on Landtype 54 are comprised of sandy loams and loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 35-65 percent gravel, cobble and stone. Soils are forming in glacial till deposits and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock ranges from 6 to 12 feet (2-4 m) beneath compacted glacial till.

Typically, Landtype 54 is associated with moderately to highly dissected very steep slopes associated with glacial trough walls with slopes ranging from 60-90 percent. Stability Class III and IV.

This Landtype occurs primarily in Environmental Zones II and III.

## LANDTYPE UNIT 55

Landtype unit 55 consists dominantly of Landtype 55 and minor amounts of Landtypes 58, 84, 54 and 90.

The major soil profile type occuring on this Landtype is number 5200. Soils on Landtype 55 are comprised of loam and sandy loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 35-65 percent gravels, cobbles and stones. Soils are forming in glacial till deposits and are well drained.

Bedrock materials are undifferentiated. Depth to bedrock ranges from 6 to 12+ feet (2-4 m) beneath compacted glacial till.

Typically, Landtype 55 is associated with flat to gently sloping surfaces associated with glacial trough bottoms with slopes ranging from 10-40 percent. Stability Class I.

This Landtype occurs primarily in Environmental Zones II and III.

## LANDTYPE UNIT 57

Landtype unit 57 consists dominantly of Landtype 57 and minor amounts of Landtypes 93, 71, 75, 58 and 59.

The major soil profile type occurring on this Landtype is 5700. Soils on Landtype 57 are comprised of loams and clay loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-25 inches (40-65 cm) in thickness and contain 50-90 percent gravel, cobble and stone. Soils are forming in residuum and colluvium and are well drained.

Bedrock materials are comprised of ultramafic, serpentinized igneous rocks. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 57 is associated with side slopes and ridges associated with ultra mafic intrusions with slopes ranging from 20-70 percent. Stability Class II.

This Landtype occurs primarily in Environmental Zone II but may also occur in Eenvironmental Zones I and III.

## LANDTYPE UNIT 58

Landtype unit 58 consists dominantly of Landtype 58 and minor amounts of landtypes 93, 57, 59 and 74.

The major soil profile type occurring on the Landtype is number 5800. Soils on Landtype 58 are comprised of heavy loams, clay loams and clays which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 30-45 inches (75-115 cm) in thickness and contain 20-45 percent gravel and cobble. Soils are forming in colluvium and residuum and are well drained.

Bedrock materials are comprised primarily of soft to moderately hard mafic, ultra mafic and highly weathered metamorphic rocks occurring along contacts and fault cones. Depth to bedrock ranges from 5 to 8 feet (1.5-2.5 m).

Typically, Landtype 58 is associated with nearly flat to gently rolling surfaces occurring along fault zones or in association with mafic or ultra mafic intrusions with slopes ranging from 10-45 percent. Stability Class III.

This Landtype occurs primarily in Environmental Zone II but may also occur in Environmental Zone III.



## LANDTYPE UNIT 59

Landtype unit 59 consists dominantly of Landtype 59 and minor amounts of Landtypes 93, 57, 58 and 74.

The major soil profile type occurring on this Landtype is number 5900. Soils on Landtype 59 are comprised of loams, clay loams and clays which have surface layers totaling 15-20 inches (40-50 cm) in thickness, subsoil layers 40-80 inches (100-205 cm) in thickness and contain 50+ percent cobble and stone. Soils are forming in colluvium (high percentage mafic coarse fragments) and are well drained.

Bedrock materials are comprised primarily of mafic, ultra mafic and highly weathered metamorphic rocks occurring along intrusive contacts and fault zones. Depth to bedrock ranges from 6 to 12+ feet (2-4 m).

Typically, Landtype 59 is associated with moderately steep to steep, somewhat rounded and dissected slopes occurring along fault zone or in association with mafic or ultra mafic intrusions with slopes ranging from 45-75 percent. Stability Class IV and V.

This Landtype occurs primarily in Environmental Zone II but may also occur in Environmental Zone III.

## LANDTYPE UNIT 60

Landtype unit 60 consists dominantly of Landtype 60 and minor amounts of Landtypes 93, 61, 70 and 69.

The major soil profile type occuring on this Landtype is number 6000. Soils on Landtype 60 are comprised of loams and fine sandy loams which have surface layers totaling 5-10 inches 910-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 50-85 percent platy gravel and cobble. Soils are forming in colluvium and are somewhat excessively drained.

Bedrock materials are comprised of highly foliated schists, primarily graphitic and micaceous in composition with inclusive of chlorite, green and talc schists. Depth to bedrock ranges from 1 to 3 feet (.5-1 m).

Typically, Landtype 60 is associated with very steep, highly dissected long straight side slopes with slopes ranging from 60-90+ percent. Stability Class III.

This Landtype occurs primarily in Environmental Zone II but may also occur in Environmental Zones I and III.

## LANDTYPE UNIT 61

Landtype unit 61 consists dominantly of Landtype 61 and minor amounts of Landtypes 93, 60, 71 and 69.

The major soils profile type occurring on this Landtype is number 6000. Soils on Landtype 61 are comprised of loams and fine sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 50-85 percent platy gravels and cobbles. Soils are forming in colluvium and are somewhat excessively drained.

Bedrock materials are comprised of highly foliated schists, primarily graphitic and micaceous in composition with inclusions of chlorite, green and talc schist. Depth to bedrock ranges from 1 to 3 feet (.5-1 m).

Typically, Landtype 61 is associated with slightly to moderately dissected, long, straight, very steep side slopes with slopes ranging from 60-90+ percent. Stability Class III.

This Landtype occurs primarily in Environmental Zone II, but may also occur in Environmental Zones I and III.

## LANDTYPE UNIT 62

Landtype unit 62 consists dominantly of Landtype 62 and minor amounts of Landtypes 92, 93, 60, 72 and 69.

The major soils profile type occurring on this Landtype is number 6000. Soils on Landtype 62 are comprised of loams and fine sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 50-85 percent platy gravels and cobbles. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of highly foliated schists, primarily graphitic and micaceous in composition with inclusions of chlorite, green and talc schists. Depth to bedrock ranges from 1 to 3 feet (.5-1 m).

Typically, Landtype 62 is associated with very steep, moderately dissected, long concave headwater basin slopes with slopes ranging from 60-90+ percent. Stability Class III.

This Landtype occurs primarily on Environmental Zone II but may also occur on Environmental Zones I and III.



## LANDTYPE UNIT 63

Landtype unit 63 consists dominantly of Landtype 63 and minor amounts of Landtypes 92, 93, 60, 61 and 69.

The major soil profile type occurring on this Landtype is number 6000. Soils on Landtype 63 are comprised of loams and fine sandy loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 15 inches (40 cm) in thickness and contain 35-60 percent platy gravels and cobbles. Soils are forming in colluvium (some residuum) and are well drained.

Bedrock materials are comprised of highly foliated schists, primarily graphitic and micaceous in composition with inclusion of chlorite, green and talc schists. Depth to bedrock ranges from 2 to 3 feet (.5-1 m).

Typically, Landtype 63 is associated with moderately steep to steep rounded slopes and hills at higher positions relative to steeper slopes with slopes ranging from 25-55 percent. Stability Class III.

This Landtype occurs primarily in Environmental Zones II and III.

## LANDTYPE UNIT 68

Landtype unit 68 consists dominantly of Landtype 68 and minor amounts of Landtypes 69 and 63.

The major soil profile type occurring in this Landtype is number 6900. Soils on Landtype 68 are comprised of sandy loams, loams and silty clay loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 45-60+ inches (115-150 cm) in thickness and contain 50-80 percent gravel, cobble and stone. Soils are forming in unconsolidated, non-cohesive, landslide debris and are somewhat poorly to well drained.

Bedrock materials are not defined but generally are comprised of graphite and mica schists. Depth to bedrock ranges from 6 to 12+ feet (2-4 m).

Typically, Landtype 68 is associated with gently rolling to moderately steep, hummocky landslide mid-slopes with slopes ranging from 15-45 percent. Stability Class III.

This Landtype occurs on Environmental Zone II, but also may occur on Environmental Zones I and III.

## LANDTYPE UNIT 69

Landtype unit 69 consists dominantly of Landtype 69 and minor amounts of Landtypes 68 and 63.

The major soil profile type occurring on this Landtype is number 6900. Soils on Landtype 69 are comprised of sandy loams, loams and silty clay loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 45-60! inches (115-150 cm) in thickness and contain 50-80 percent gravel, cobble and stone. Soils are forming in unconsolidated, non-cohesive, landslide debris and are somewhat poorly to well drained.

Bedrock materials are not defined but generally are comprised of graphite and mica schists. Depth to bedrock ranges from 6 to 12+ feet (2-4 m).

Typically, Landtype 69 is associated with steep and uneven landslide toe slope positions with slopes ranging from 45-80 percent. Stability Class V.

This Landtype occurs primarily in Environmental Zone II, but also may occur in Environmental Zones I and III.

## LANDTYPE UNIT 70

Landtype unit 70 consists dominantly of Landtype 70 and minor amounts of Landtypes 93, 75, 71 and 59.

The major soil profile type occurring on this Landtype is number 7000. Soils on Landtype 70 are comprised of loams and clay loams (some fine sandy loams) which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 45-60+ percent gravel and cobble. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of hard to moderately hard, highly fractured metasedimentary and metavolcanic rocks of the Applegate Group. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 70 is associated with highly dissected, long, steep to very steep, straight side slopes with slopes ranging from 55-80+ percent. Stability Class III and IV.

This Landtype occurs primarily on Environmental Zones I and II but may also occur on Environmental Zone III.



## LANDTYPE UNIT 71

Landtype unit 71 consists dominantly of Landtype 71 and minor amounts of Landtypes 93, 70 and 75.

The major soil profile type occurring on this Landtype is number 7000. Soils on Landtype 71 are comprised of loams and clay loams (some fine sandy loams) which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 45-60+ percent gravel and cobble. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of moderately hard to hard, highly fractured metasedimentary and metavolcanic rocks of the Applegate Group. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 71 is associated with slightly to moderately dissected, steep to very steep, straight side slopes with slopes ranging from 55-80+ percent. Stability Class III.

This Landtype occurs primarily in Environmental Zones I and II, but may also occur in Environmental Zone III.

## LANDTYPE UNIT 72

Landtype unit 72 consists dominantly of Landtype 72 and minor amounts of Landtypes 92, 93, 75 and 70.

The major soil profile type occurring on this Landtype is number 7000. Soils on Landtype 72 are comprised of loams and clay loams (some fine sandy loams) which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) and contain 45-60+ percent gravel and cobble. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of hard to moderately hard, highly fractured metasedimentary and metavolcanic rocks of the Applegate Group.

Typically, Landtype 72 is associated with steep, moderately dissected slopes in concave, headwater areas with slopes ranging from 55-80+ percent. Stability Class III.

This Landtype occurs primarily in Environmental Zones II and III but may also occur on Zone I.

## LANDTYPE UNIT 73

Landtype unit 73 consists dominantly of Landtype 73 and minor amounts of Landtypes 93, 75, 71, 74 and 77.

The major soil profile type occurring on this Landtype is number 7400. Soils on Landtype 73 are comprised of loams and clay loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 20-40 inches (50-100 cm) in thickness and contain 35-50+ percent gravel and cobble. Soils are forming in colluvium and residuum and are well drained.

Bedrock materials are comprised of soft to moderately hard, highly fractured metasedimentary and metavolcanics of the Applegate Group. Depth to bedrock ranges from 3 to 5 feet (1-1.5 m).

Typically, Landtype 73 is associated with moderately steep, highly dissected convex (rounded) slopes and hills with slopes ranging from 35-65 percent. Stability Class II and III.

This Landtype occurs primarily on Environmental Zones I and II.

## LANDTYPE UNIT 74

Landtype unit 74 consists dominantly of Landtype 74 and minor amounts of Landtypes 93, 75, 71, 73 and 77.

The major soil profile type occurring on this Landtype is number 7400. Soils on Landtype 74 are comprised of loams and clay loams which have surface layers totaling 10-15 inches (25-40 cm) in thickness, subsoil layers 20-40 inches (50-100 cm) in thickness and contain 35-50+ percent gravel and cobble. Soils are forming in colluvium and residuum and are well drained.

Bedrock materials are comprised of soft to moderately hard, highly fractured metasedimentary and metavolcanics of the Applegate Group. Depth to bedrock ranges from 3 to 5 feet (1-1.5 m).

Typically, Landtype 74 is associated with moderately steep, slightly to moderately dissected convex (rounded) slopes and hills with slopes ranging from 35-65 percent. Stability Class II and III.

This Landtype occurs primarily in Environmental Zones I and II.



## LANDTYPE UNIT 75

Landtype unit 75 consists dominantly of Landtype 75 and minor amounts of Landtypes 70, 71, 72 and 93.

The major soil profile type occurring on this Landtype is number 7500. Soils on Landtype 75 are comprised of loams and sandy loams which have surface layers totaling 5-15 inches (10-40 cm) in thickness, subsoil layers 40-60 inches (100-150 cm) in thickness and contain 50-75 percent gravel and cobble. Soils are forming in colluvium and talus and are excessively well drained.

Bedrock materials are not specifically defined but consist generally of Applegate Group metasediments and metavolcanics. Depth to bedrock ranges from 6 to 12+ feet (2-4 m).

Typically, Landtype 75 is associated with colluvial buildups along draws on steep slopes, along toe slopes and below mid-slope rock outcrops with slopes ranging from 55-80+ percent. Stability Class III.

This Landtype occurs primarily in Environmental Zones I, II and III.

## LANDTYPE UNIT 77

Landtype unit 77 consists dominantly of Landtype 77 and minor amounts of Landtypes 90, 93, 73 and 74.

The major soil profile type occurring on this Landtype is number 7700. Soils on Landtype 77 are comprised of loams, clay loams and clays which have surface layers totaling 15-20 inches (40-50 cm) in thickness, subsoil layers 25-45 inches (65-115 cm) in thickness and contain 10-35 percent gravel. Soils are forming in residium and alluvium (old terraces) and are well drained.

Bedrock materials are comprised of saprolytic to moderately hard, highly fractured metasediments and metavolcanics of the Applegate Group. Depth to bedrock ranges from 3 to 5 feet (1-1.5 m).

Typically, Landtype 77 is associated with flat to gently sloping surfaces developing from slope wash and old terrace deposits with slopes ranging from 10-35 percent. Stability Class I and II.

This Landtype occurs primarily in Environmental Zone I but may also occur in Environmental Zone II.

## LANDTYPE UNIT 80

Landtype 80 consists dominantly of Landtype 80 and minor amounts of Landtypes 93, 82 and 53.

The major soil profile type occurring on this Landtype is number 8000. Soils on Landtype 80 are comprised of sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 15-35 percent gravel and cobble. Soils are forming in colluvium and residuum and are well to moderately well drained.

Bedrock materials consist of hard to moderately hard quartz diorite. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 80 is associated with smooth to slightly dissected, steep to very steep, concave upper headwater areas with slopes ranging from 45-80+ percent. Stability Class III.

This Landtype occurs primarily on Environmental Zones II and III, but may also occur on Environmental Zone I.

## LANDTYPE UNIT 81

Landtype unit 81 consists dominantly of Landtype 81 and minor amounts of Landtypes 82, 83 and 84.

The major soil profile type occurring on this Landtype is number 8100. Soils on Landtype 81 are comprised of sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 30-50 inches (75-125 cm) in thickness and contain 30-60 percent gravel and cobble. Soils are forming in colluvium and are well drained.

Bedrock materials are comprised of quartz diorite materials. Depth to bedrock ranges from 6 to 12+ feet (2-4 m).

Typically, Landtype 81 is associated with colluvial deposits at toe slopes of steep hillsides along drainage ways with slopes ranging from 20-40 percent. Stability Class II and III.

This Landtype occurs primarily on Environmental Zones II and III.



## LANDTYPE UNIT 82

Landtype unit 82 consists dominantly of Landtype 82 and minor amounts of Landtypes 80, 81 and 84.

The major soil profile type occurring on this Landtype is number 8200. Soils on Landtype 82 are comprised of sandy loams and loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 25-45 inches (65-115 cm) in thickness and contain 25-40 percent fine gravel. Soils are forming in weathered diorite colluvium and are excessively drained.

Bedrock materials are comprised of decomposed quartz diorite, diorites and gabbros. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 82 is associated with slight to moderately dissected, steep to very steep straight slopes with slopes ranging from 60-80+ percent. Stability Class III and IV.

This Landtype occurs primarily in Environmental Zones II and III, but may also occur in Environmental Zone I.

## LANDTYPE UNIT 83

Landtype 83 consists dominantly of Landtype 83 and minor amounts of Landtypes 82 and 84.

The major soil profile type occurring on this Landtype is number 8200. Soils on Landtype 83 are comprised of sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-30 inches (40-75 cm) in thickness and contain 10-20 percent gravel and cobble. Soils are forming in residuum and are somewhat excessively drained.

Bedrock materials are comprised of soft to moderately hard quartz diorite. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 83 is associated with smooth, gently sloping and rounded ridges and hilltops with slopes ranging from 10-35 percent. Stability Class II.

This Landtype occurs primarily on Environmental Zones II and III, but may also occur on Environmental Zone I.

## LANDTYPE UNIT 84

Landtype unit 84 consists dominantly of Landtype 84 and minor amounts of Landtypes 80, 81 and 82.

The major soil profile type occurring on this Landtype is number 8200. Soils on Landtype 84 are comprised of sandy loams and loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 25-45 inches (65-115 cm) in thickness and contain 25-40 percent fine gravels. Soils are forming in weathered diorite colluvium and residuum and are excessively drained.

Bedrock materials are comprised of quartz diorites, diorites and gabbros. Depth bedrock ranges from 2 to 5 feet (.5-1.5 m).

Typically, Landtype 84 is associated with flat to gently sloping mid and lower slope benches with slopes ranging from 10-35 percent. Stability Class II.

This Landtype occurs primarily on Environmental Zones II and III.

## LANDTYPE UNIT 85

Landtype unit 85 consists dominantly of Landtype 85 and minor amounts of landtypes 82, 84, 86 and 87.

The major soil profile type occurring on this Landtype is number 8500. Soils on Landtype 85 are comprised of sandy loams and sandy clay loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 20-40 inches (50-100 cm) in thickness and contain 35-50 percent fine gravels. Soils are forming in colluvium and residuum from decomposing diorites (slope wash and slope deposits) and are well drained.

Bedrock materials are comprised of highly weathered diorites and gabbros. Depth to bedrock ranges from 2 to 5 feet (.5-1.5 m).

Typically, Landtype 85 is associated with short, steep, slightly to moderately dissected choppy slopes and overall broken topography with slopes ranging from 35-70 percent. Stability Class III.

This Landtype occurs primarily on Environmental Zone I.



## LANDTYPE UNIT 86

Landtype unit 86 consists dominantly of Landtype 86 and minor amounts of Landtypes 82, 84, 85 and 87.

The major soil profile type occurring on this Landtype is number 8600. Soils on Landtype 86 are comprised of sandy loams and loams over sandy clay loams and clay loams which have surface layers totaling 5-15 inches (10-25 cm) in thickness, subsoil layers 20-40 inches (50-100 cm) in thickness and contain 15-35 percent fine gravels. Soils are forming in residuum and colluvium from weathered diorite (slope wash and slope deposits) and are well drained.

Bedrock materials are comprised of highly weathered diorites and gabbros. Depth to bedrock ranges from 4 to 7 feet (1-2 m).

Typically, Landtype 86 is associated with smooth gently sloping, rounded surfaces, toe slopes and slope wash deposits with slopes ranging from 15-35 percent. Stability Class II.

This Landtype occurs primarily in Environmental Zone I.

## LANDTYPE UNIT 87

Landtype unit 87 consists dominantly of Landtype 87 and minor amounts of Landtypes 82, 84, 85 and 86.

The major soil profile type occurring on this Landtype is number 8500. Soils on Landtype 87 are comprised of sandy loams and sandy clay loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 20-40 inches (50-100 cm) in thickness and contain 35-50 percent fine gravels. Soils are forming in colluvium and residuum from decomposing diorite and are well drained.

Bedrock materials are comprised of highly weathered diorites and gabbros. Depth of bedrock ranges from 2 to 5 feet (.5-1.5 m).

Typically, Landtype 87 is associated with short, steep, highly dissected choppy slopes and overall broken topography with slopes ranging from 35-70 percent. Stability Class III.

This Landtype occurs primarily on Environmental Zone I.

## LANDTYPE UNIT 88

Landtype unit 88 consists dominantly of Landtype 88 and minor amounts of Landtypes 52, 54, 80, 82 and 89.

The major soil profile type occurring on this Landtype is number 8100. Soils on Landtype 88 are comprised of sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 35-50 inches (90-125 cm) in thickness and contain 30-60 percent gravel, cobble and stone. Soils are forming in colluvium and are well to excessively drained.

Bedrock materials consist of quartz diorite materials. Depth to bedrock ranges from 4 to 10 feet (1-3 m).

Typically, Landtype 88 is associated with colluvial deposits on steep to very steep mid-slope positions below rock outcrops and sharp ridges with slopes ranging from 50-80+ percent. Stability Class III and IV.

This Landtype occurs primarily in Environmental Zones I and II, but may also occur on Environmental Zone III.

## LANDTYPE UNIT 89

Landtype unit 89 consists dominantely of Landtype 89 and minor amounts of Landtypes 80, 82 and 88.

The major soil profile type occurring on this Landtype is number 8900. Soils on Landtype 89 are comprised of sandy loams which have surface layers totaling 5-10 inches (10-25 cm) in thickness, subsoil layers 15-25 inches (40-65 cm) in thickness and contain 20-35 percent gravel and cobble. Soils are forming in colluvium and residuum from quartz diorite and are well drained.

Bedrock materials consist of hard to moderately hard quartz diorite materials. Depth to bedrock ranges from 2 to 4 feet (.5-1 m).

Typically, Landtype 89 is associated with highly dissected, steep to very steep, straight side slopes with slopes ranging from 50-80+ percent. Stability Class III.

This Landtype occurs primarily on Environmental Zones I and II, but may also occur on Environmental Zone III.



## MISCELLANEOUS UNITS 1/

90 - Recent Alluvial Deposits by Major Streams

These units consist of recently worked sand, gravel and boulders. They occur along most stream courses and are periodically reworked by high water. Vegetation is generally lacking.

91 - South Aspect Slopes at Low Elevations

These units contain variable soil deposits. The factors affecting vegetation the most seem to be the high summer temperatures and dry soil conditions. Slopes are variable in shape and steepness.

92 - Perennially Wet Alder Glades

These areas commonly occur in draws and basins. They support Alder vegetation on wet soils of variable composition and slope.

93 - Large Rock Outcrops and Associated Talus Fields

These units commonly occur along ridge tops and on southern exposures. Various kinds of rock are represented. Some areas exhibit glacial pluck and scour characteristics.

94 - Perennially Wet Meadows and Marshy Land

Areas that have high water tables or ponded water. This unit is not limited to a specific topographic position but may occur along streams, at the base of cliffs, adjacent to lakes, on hill slopes, etc. Vegetation consists of sedges, rushes, grasses and other water tolerant species and provides valuable forage for wildlife and livestock.

95 - Seasonally Dry Meadows and Scabland

Unforested areas which become dry during the summer months and support various grasses, forbs, sedges and shrubs. Small patches of scattered confiers may be included. These units are not limited to a specific topographic position.

99 - Old Landflows and Landslide Deposits Consisting of Interconnected Steep Slopes and Benches

These areas consist of slopes formed and shaped by mass movement processes. These processes result in churned soil deposits in which drainage may range from poor to excessive. Soil, bedrock and vegetation are highly variable. These variabilities make site-by-site evaluation mandatory for management.

1/ See Mapping Unit Definitions (Appendix) and the Table of Landtype Characteristics.

LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE SISKIYOU MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| 52 | | | | | | | 2,189 | 887 |
| 53 | | | | | | | 1,121 | 454 |
| 54 | | | | | | | 1,138 | 461 |
| 55 | | | | | | | 1,717 | 695 |
| 57 | | | | | | | 1,868 | 757 |
| 58 | | | | | | | 666 | 270 |
| 59 | | | | | | | 1,007 | 408 |
| 60 | | | | | | | * | * |
| 61 | | | | | | | 268 | 109 |
| 62 | | | | | | | 290 | 117 |
| 63 | | | | | | | 582 | 236 |
| 68 | | | | | | | * | * |
| 69 | | | | | | | 3,117 | 1,262 |
| 70 | | | | | | | * | * |
| 71 | | | | | | | 13,650 | 5,528 |
| 72 | | | | | | | 1,978 | 801 |
| 73 | | | | | | | 922 | 373 |
| 74 | | | | | | | 5,531 | 2,240 |
| 75 | | | | | | | * | * |
| 77 | | | | | | | 1,927 | 780 |
| 80 | | | | | | | 1,718 | 696 |
| 81 | | | | | | | 682 | 276 |
| 82 | | | | | | | 11,100 | 4,500 |
| 83 | | | | | | | 3,775 | 1,528 |
| 84 | | | | | | | 959 | 388 |
| 85 | | | | | | | * | * |
| 86 | | | | | | | * | * |
| 87 | | | | | | | 1,369 | 554 |
| 88 | | | | | | | 271 | 110 |
| 89 | | | | | | | 355 | 144 |
| 90 | | | | | | | 648 | 262 |
| 91 | | | | | | | 15,299 | 6,196 |
| 92 | | | | | | | 1,709 | 692 |
| 93 | | | | | | | 10,432 | 4,225 |
| 94 | | | | | | | 2,964 | 1,200 |
| 95 | | | | | | | 2,019 | 818 |
| 99 | | | | | | | 5.217 | 2,113 |



LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE SISKIYOU MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| COMPLEXES | | | | | | | | |
| 503 | 40% | 59 | 30% | 70 | 30% | 93 | 305 | 124 |
| 505 | 40% | 59 | 30% | 70 | 30% | 75 | 435 | 176 |
| 515 | 40% | 59 | 30% | 71 | 30% | 99 | 540 | 219 |
| 520 | 40% | 54 | 30% | 52 | 30% | 80 | 1,051 | 426 |
| 523 | 60% | 52 | 40% | 53 | | | 1,077 | 423 |
| 535 | 40% | 59 | 30% | 93 | 30% | 75 | 2,259 | 915 |
| 541 | 50% | 54 | 50% | 71 | | | 78 | 32 |
| 542 | 65% | 54 | 35% | 92 | | | 268 | 109 |
| 543 | 56% | 54 | 35% | 93 | | | 595 | 241 |
| 545 | 50% | 54 | 50% | 59 | | | 1,631 | 661 |
| 557 | 60% | 59 | 40% | 57 | | | 112 | 45 |
| 560 | 50% | 59 | 50% | 60 | | | 99 | 40 |
| 571 | 30% | 59 | 70% | 71 | | | 670 | 271 |
| 573 | 60% | 57 | 40% | 93 | | | 918 | 372 |
| 575 | 60% | 57 | 40% | 59 | | | 295 | 119 |
| 585 | 50% | 58 | 50% | 59 | | | 1,591 | 664 |
| 587 | 60% | 58 | 40% | 57 | | | 126 | 51 |
| 592 | 65% | 55 | 35% | 92 | | | 89 | 36 |
| 593 | 60% | 59 | 40% | 93 | | | 682 | 276 |
| 594 | 65% | 52 | 35% | 94 | | | 271 | 110 |
| 597 | 40% | 58 | 40% | 59 | 20% | 57 | 545 | 221 |
| 601 | 50% | 60 | 50% | 91 | | | 1,066 | 432 |
| 609 | 65% | 60 | 35% | 69 | 1/ | | 2,671 | 1,082 |
| 613 | 60% | 61 | 40% | 93 | | | 422 | 171 |
| 619 | 65% | 61 | 35% | 69 | 1/ | | 5,821 | 2,358 |
| 621 | 50% | 62 | 50% | 91 | | | 618 | 250 |
| 629 | 65% | 62 | 35% | 69 | 1/ | | 1,427 | 578 |
| 631 | 50% | 63 | 50% | 61 | | | 1,326 | 537 |
| 633 | 60% | 63 | 40% | 93 | | | 289 | 117 |
| 634 | 60% | 63 | 40% | 94 | | | 125 | 51 |
| 639 | 65% | 63 | 35% | 69 | 1/ | | 2,340 | 948 |
| 689 | 60% | 68 | 40% | 69 | 1/ | | 1,082 | 438 |
| 699 | 30% | 60 | 30% | 69 | 1/ | 40% 91 | 131 | 53 |
| 701 | 40% | 71 | 40% | 75 | 30% | 93 | 740 | 300 |
| 703 | 65% | 70 | 35% | 93 | | | 289 | 117 |
| 705 | 60% | 70 | 40% | 75 | | | 9,791 | 3,965 |
| 711 | 40% | 74 | 20% | 71 | 40% | 91 | 777 | 315 |
| 713 | 65% | 71 | 35% | 93 | | | 2,216 | 897 |
| 714 | 60% | 71 | 40% | 74 | | | 1,329 | 538 |

LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE SISKIYOU MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| 715 | 35% | 71 | 35% | 59 | 30% | 93 | 970 | 393 |
| 718 | 50% | 71 | 50% | 58 | | | 262 | 106 |
| 719 | 50% | 71 | 50% | 91 | | | 1,418 | 574 |
| 723 | 70% | 72 | 30% | 93 | | | 481 | 195 |
| 725 | 60% | 72 | 40% | 75 | | | 3,433 | 1,390 |
| 731 | 60% | 73 | 40% | 71 | | | 779 | 315 |
| 733 | 70% | 73 | 30% | 93 | | | 165 | 67 |
| 735 | 30% | 70 | 30% | 93 | 40% | 75 | 780 | 316 |
| 737 | 50% | 73 | 50% | 77 | | | 986 | 399 |
| 741 | 60% | 74 | 40% | 71 | | | 722 | 292 |
| 743 | 70% | 74 | 30% | 93 | | | 1,781 | 721 |
| 747 | 60% | 74 | 40% | 77 | | | 3,201 | 1,296 |
| 751 | 60% | 75 | 40% | 71 | | | 796 | 322 |
| 753 | 35% | 70 | 35% | 75 | 30% | 93 | 2,082 | 843 |
| 757 | 35% | 75 | 30% | 54 | 35% | 57 | 1,200 | 486 |
| 763 | 35% | 72 | 35% | 62 | 30% | 75 | 720 | 292 |
| 771 | 50% | 73 | 50% | 91 | | | 1,988 | 805 |
| 774 | 60% | 73 | 40% | 75 | | | 89 | 36 |
| 775 | 60% | 71 | 40% | 75 | | | 4,229 | 1,713 |
| 777 | 30% | 72 | 30% | 71 | 40% | 75 | 816 | 330 |
| 791 | 50% | 74 | 50% | 91 | | | 553 | 224 |
| 793 | 35% | 70 | 35% | 59 | 30% | 93 | 1,174 | 475 |
| 795 | 35% | 70 | 35% | 59 | 30% | 75 | 1,934 | 783 |
| 797 | 30% | 71 | 40% | 91 | 30% | 75 | 994 | 403 |
| 800 | 60% | 80 | 40% | 92 | | | 3,833 | 1,522 |
| 802 | 60% | 80 | 40% | 82 | | | 1,094 | 443 |
| 804 | 60% | 80 | 40% | 54 | | | 371 | 150 |
| 808 | 50% | 80 | 50% | 89 | | | 210 | 85 |
| 815 | 50% | 81 | 50% | 55 | | | 96 | 39 |
| 820 | 60% | 82 | 40% | 80 | | | 705 | 289 |
| 822 | 40% | 82 | 40% | 80 | 20% | 92 | 734 | 297 |
| 824 | 60% | 82 | 40% | 54 | | | 131 | 53 |
| 828 | 50% | 82 | 50% | 88 | | | 1,163 | 471 |
| 829 | 60% | 82 | 40% | 89 | | | 1,691 | 685 |
| 832 | 40% | 82 | 40% | 53 | 20% | 92 | 382 | 155 |
| 843 | 40% | 80 | 40% | 54 | 20% | 93 | 804 | 326 |
| 845 | 50% | 84 | 50% | 55 | | | 187 | 76 |
| 856 | 50% | 85 | 50% | 86 | | | 1,051 | 426 |
| 884 | 60% | 88 | 40% | 54 | | | 154 | 62 |



LIST OF LANDTYPE UNITS
AND COMPLEXES MAPPED
IN THE SISKIYOU MOUNTAINS

| MAP UNIT NO. | COMPLEX COMPONENTS % | UNIT NO. | % | UNIT NO. | % | UNIT NO. | TOTAL ACRES | TOTAL HECTARES |
|---|---|---|---|---|---|---|---|---|
| 888 | 50% | 80 | 50% | 88 | | | 422 | 179 |
| 892 | 60% | 89 | 40% | 82 | | | 360 | 146 |
| 898 | 50% | 89 | 50% | 88 | | | 1,200 | 486 |
| 913 | 60% | 91 | 40% | 93 | | | 31 | 13 |
| 915 | 30% | 92 | 40% | 71 | 30% | 95 | 671 | 272 |
| 924 | 50% | 92 | 50% | 94 | | | 1,176 | 922 |
| 931 | 60% | 93 | 40% | 91 | | | 5,108 | 2,069 |
| 935 | 50% | 93 | 50% | 95 | | | 285 | 115 |
| 969 | 50% | 99 1/ | 50% | 69 1/ | | | 605 | 245 |
| 979 | 60% | 99 1/ | 40% | 71 | | | 255 | 103 |
| Water | | | | | | | 82 | 33 |

* Thses landtypes are mapped only in complex with other landtype units.

1/ This component may severely limit management activity on entire landtype complex.

# TABLES OF INTERPRETATION

# PERTAINING TO LANDTYPE UNITS

# IN THE

# SISKIYOU MOUNTAINS

# PORTION OF THE

# ROGUE RIVER NATIONAL FOREST

TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|---|
| 52 | II, III | Very stable | N/A | None | Slight | A | Low | Sand, silt |
| 53 | II, III | Stable | N/A | None | Moderate | A | Low | Sand, silt |
| 54 | II, III | Moderately stable to unstable | Debris avalanche. | Increased | Severe | A | Moderate to high | Sand, silt |
| 55 | II, III | Very stable | N/A | None | Very slight | A | Low | Sand, silt |
| 57 | I, II & III | Stable | Slumps & channel scour. | Increased | Moderate to severe | C | Moderate | Silt, clay |
| 58 | II, III | Moderately stable | Slumps & channel scour. | Increased | Moderate to slight | C | Moderate | Silt, clay |
| 59 | II, III | Unstable to very unstable | Slumps, channel scour & debris avalanche. | Greatly increased | Very severe | B & C | High | Silt, clay |
| 60 | I, III | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate | Sand, silt |
| 60 | II | Moderately stable | Cnannel scour & debris avalanche. | Greatly increased | Very severe | B | High | Silt, sand |
| 61 | I, III | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate | Silt, sand |
| 61 | II | Moderately stable | Channel scour & debris avalanche. | Greatly increased | Very severe | B | Moderate to high | Silt, sand |
| 62 | I | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate | Silt, sand |
| 62 | II, III | Moderately stable | Channel scour & debris avalanche. | Greatly increased | Very severe | B | High | Silt, sand |
| 63 | II, III | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate to high | Silt, sand |
| 68 | I, II & III | Moderately stable | Slumps & channel scour. | Increased | Moderate | A & B | Moderate to low | Silt, sand |
| 69 | I | Unstable to very unstable | Slumps, channel scour & debris avalanche. | Greatly increased | Severe | A | High to moderate | Silt, sand |
| 69 | II, III | Very unstable | Slumps, channel scour & debris avalanche. | Greatly increased | Very severe | A | High | Silt, sand |
| 70 | I | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate to high | Silt, clay |
| 70 | II, III | Unstable to moderately stable | Channel scour & debris avalanche. | Greatly increased | Very severe | B | High | Silt, clay |

* See map for Environmental Zone Delineations.

TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|---|
| 71 | I, III | Moderately stable | Channel scour & debris avalanche. | Increased | Moderate | B | Moderate | Silt, clay |
| 71 | II | Moderately stable | Channel scour & debris avalanche. | Greatly increased | Severe | B | Moderate to high | Silt, clay |
| 72 | I | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | Moderate to high | Silt, clay |
| 72 | II, III | Moderately stable | Channel scour & debris avalanche. | Greatly increased | Severe | B | High | Silt, clay |
| 73 | I | Stable | Channel scour. | Slightly increased | Moderate to severe | B | Moderate | Silt, clay |
| 73 | II | Stable to moderately stable | Channel scour & slumps. | Increased | Severe to moderate | B | Moderate to high | Silt, clay |
| 74 | I | Stable | Channel scour & clumps. | Slightly increased | Moderate | B | Moderate | Silt, clay |
| 74 | II | Moderately stable | Channel scour & slumps. | Increased | Moderate to severe | B | Moderate | Silt, clay |
| 75 | I, II & III | Moderately stable | Channel scour & debris avalanche. | Increased | Moderate | A | Moderate | Silt, sand |
| 77 | I, II | Stable | N/A | Slightly increased | Slight | C | Low | Clay, silt |
| 80 | I, III | Moderately stable | Channel scour & debris avalanche. | Increased | Moderate to severe | B | Moderate | Sand, silt |
| 80 | II | Moderately stable | Channel scour & debris avalanche. | Greatly increased | Severe | B | High | Sand, silt |
| 81 | II, III | Stable | Channel scour. | Increased | Moderate | A | Moderate to low | Sand, silt |
| 82 | I, III | Moderately stable | Channel scour & debris avalanche. | Increased | Moderate to severe | A & B | Moderate to high | Sand, silt |
| 82 | II | Moderately stable to unstable | Channel scour & debris avalanche. | Greatly increased | Very severe | A & B | High | Sand, silt |
| 83 | I, III | Stable | N/A | Slightly increased | Slight | B | Low | Sand, silt |
| 83 | II | Stable | N/A | Increased | Moderate to slight | B | Moderate to low | Sand, silt |
| 84 | II, III | Stable | N/A | Increased | Moderate to slight | A & B | Moderate to low | Sand, silt |
| 85 | I | Moderately stable | Channel scour & slumps. | Greatly increased | Very severe | B | High | Mixed |

* See map for Environmental Zone Delineations.



TABLE OF EROSION AND HYDROLOGIC INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | NATURAL STABILITY | NATURE OF MASS MOVEMENT | EXPECTED MASS MOVEMENT AS A RESULT OF MAN'S ACTIVITY | SOIL EROSION POTENTIAL | SOIL HYDROLOGIC GROUP | SEDIMENT YIELD POTENTIAL | EXPECTED SEDIMENT SIZE |
|---|---|---|---|---|---|---|---|---|
| 86 | I | Stable | N/A | Slightly increased | Moderate to slight | B & C | Moderate | Mixed |
| 87 | I | Moderately stable | Channel scour & slumps. | Greatly increased | Very severe | B | High | Mixed |
| 88 | I | Moderately stable | Channel scour & debris avalanche. | Increased | Moderate to severe | A | Moderate | Sand, silt |
| 88 | II, III | Moderately stable to unstable | Channel scour & debris avalanche. | Increased | Severe | A | Moderate to high | Sand, silt |
| 89 | I | Moderately stable | Channel scour & debris avalanche. | Increased | Severe | B | High to moderate | Sand, silt |
| 89 | II, III | Moderately stable | Channel scour & debris avalanche. | Increased | Very severe | B | Moderate | Sand, silt |
| 90 | I, II | Very stable | N/A | None | Very slight | Variable | Low | Mixed |
| 91 | I, II | Variable | Variable | Generally increased but variable | Generally severe | Variable | Generally moderate to high | Variable |
| 92 | I, II & III | Variable | Variable | Generally increased but variable | Variable | D | Variable | Variable |
| 93 | I, II & III | Stable | Debris avalanche. | None | N/A | N/A | N/A | N/A |
| 94 | I, II & III | Variable | Variable | Variable | Variable | D | Variable | Variable |
| 95 | I, II & III | Variable | Variable | Variable | Variable | Variable | Variable | Variable |
| 99 | I | Moderately stable to very unstable | Slumps & channel scour. | Increased | Severe | Variable | Moderate to high | Clay, silt |
| 99 | II, III | Unstable to very unstable | Slumps & channel scour. | Greatly increased | Very severe to severe | Variable | High | Clay, silt |



* See map for Environmental Zone Delineations.

TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILTER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | II, III | Well | Stoney soils. | None | Moderate | Low | Low | Well | High cobble & stone content in soil. | None | Moderate/poor (3) | Unsuited (6) |
| 53 | II, III | Unsuited, locally moderate where slope is not excessive. | Excessive slope, stoney soils. | None | Moderate/high | Low | Low | Moderate/well | High cobble & stone content in soil & slope. | Water bar | Unsuited/poor (2) (3) | Unsuited (2) (6) |
| 54 | II, III | Unsuited | Excessive slope, stoney soils, rock outcrops. | None | N/A | N/A | N/A | Poor | Steep slope, stoney soils & rock outcrop. | Water bar | N/A | N/A |
| 55 | II, III | Well | Stoney soils. | None | Low | Low | Low | Well | None | None | Moderate/poor (3) | Unsuited, locally suited. (6) |
| 57 | I, II & III | Unsuited | Shallow, cobbly soils, steep slopes, low productivity, rock outcrops. | None | N/A | N/A | N/A | Poor/Variable | High rock outcrop percent. | Water bar or outslope trail grade. | N/A | N/A |
| 58 | II, III | Well | Locally excessive slopes. | None | Moderate | Moderate | High | Well | None | None | Moderate/poor | Suited |
| 59 | II, III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Moderate/poor | Steep slopes. | Water bar | N/A | N/A |
| 60 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Shallow soils, steep slopes, high rock outcrop percent. | Water bar | N/A | N/A |
| 61 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Shallow soils, steep slopes, high rock outcrop percent. | Water bar | N/A | N/A |
| 62 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Shallow soils, steep slopes, high rock outcrop percent. | Water bar | N/A | N/A |
| 63 | II & III | Unsuited, locally moderate where slope is not excessive. | Excessive slope, shallow soils, high rock outcrop percentage. | None | High | High | Moderate | Well | Shallow soils, high rock outcrop percent. | Water bar | Poor/unsuited (2) (3) | Unsuited |
| 68 | I | Moderate | Locally excessive slopes. (1) | Irrigation may be required to establish new vegetation in campground area. | Moderate to high | High | Moderate | Well | None | None | Well, locally unsuited. (2) (4) | Suited, locally unsuited. (2) (4) |
| 68 | II, III | Well | Locally excessive slopes. | None | Moderate | High | Moderate | Well | None | None | Well, locally unsuited. (2) (4) | Suited, locally unsuited. (2) (4) |
| 69 | I, II & III | Unsuited | Excessive slopes, very unstable soils. | None | N/A | N/A | N/A | Moderate/well | High soil creep rate, some wet areas. | Water bar, avoid wet areas. | N/A | N/A |
| 70 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steepness, high rock outcrop percent, shallow soils. | Water bar | N/A | N/A |
| 71 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steepness, high rock outcrop percent, shallow soils. | Water bar | N/A | N/A |
| 72 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steepness, high rock outcrop percent, shallow soils. | Water bar | N/A | N/A |
| 73 | I, II | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Moderate | Steepness | Water bar | N/A | N/A |
| 74 | I, II | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Moderate | Steepness | Water bar | N/A | N/A |
| 75 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Moderate | Steepness, cobbley soils. | Water bar | N/A | N/A |
| 77 | I | Moderate | Locally excessive slope. (1) | Irrigation may be required to establish new vegetation in campground area. | Moderate | Low | Moderate | Well | None | None | Moderate/poor (3) | Suited |
| 77 | II | Well | Locally excessive slope. | None | Low/moderate | Low | Moderate | Well | None | None | Moderate/poor (3) | Suited |
| 80 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steepness, high rock outcrop percent, high ravel & erosion potential. | Water bar & use retaining structures to control ravel. | N/A | N/A |
| 81 | II, III | Unsuited, locally suited where slope is not limiting. | Excessive slope. | None | High/moderate | Low | Low | Moderate | Washouts may occur along streams. | Water bar, avoid locating trail too near streams. | Poor/unsuited (2) (5) | Unsuited (2) |
| 82 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steepness, erodable soils with high ravel rates. | Water bar & use retaining structures to control ravel. | N/A | N/A |
| 83 | I | Poor | Locally excessive slope, very droughty soils. (1) | Irrigation may be required to establish new vegetation in campground area. | Moderate/high | Low | Low | Well | Soils are easily eroded. | Water bar | Unsuited, locally poor. (3) | Unsuited, locally suited. (6) |

* See map for Environmental Zone Delineations.



TABLE OF RECREATION INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | SUITABILITY FOR RECREATIONAL DEVELOPMENT | LIMITATIONS FOR RECREATIONAL DEVELOPMENT | SUGGESTED TREATMENT TO INCREASE SUITABILITY | SOIL & SITE DAMAGE SUSCEPTIBILITY | SUSCEPTIBILITY TO DUSTINESS | SUSCEPTIBILITY TO MUDDINESS | TRAIL SUITABILITY | LIMITATIONS FOR TRAILS | CONSIDERATIONS FOR TRAIL IMPROVEMENTS | SUITABILITY FOR SEWAGE FILTER FIELDS | VAULT TOILET SUITABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 83 | II, III | Moderate | Locally excessive slope, droughty soils. | None | Moderate | Low | Low | Well | Soils are easily eroded. | Water bar | Unsuited, locally poor. (3) | Unsuited, locally suited. (6) |
| 84 | II, III | Well | Locally excessive slope, droughty soils. | None | Low/moderate | Low | Low | Well | Soils are easily eroded. | Water bar | Well | Suited |
| 85 | I | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steep slopes, high erosion & ravel rates. | Water bar & use retaining structures to control ravel. | N/A | N/A |
| 86 | I | Moderate, locally poor. | Slope may be excessive locally. (1) | Irrigation may be required to establish new vegetation in campground areas. | Low/moderate | Low | Moderate | Well | None | Water bar on slopes over 15%. | Moderate | Suited |
| 87 | I | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steep slopes, high ravel & erosion rates. | Water bar & use retaining structures to control ravel. | N/A | N/A |
| 88 | I, II & III | Unsuited | Excessive slope. | None | N/A | N/A | N/A | Poor | Steep slopes, high ravel & erosion rates. | Water bar & use retaining structures to control ravel. | Moderate | Suited |
| 89 | I, II & III | Unsuited | Excessive slope & high rock outcrop percent. | None | N/A | N/A | N/A | Poor | Steep slopes, high ravel/erosion rates & rock outcrop percent. | Water bar & use retaining structures to control ravel. | N/A | N/A |
| 90 | I, II | Generally suited. | Excessive gravel, cobble & rockiness. (1) | Irrigation & topsoil may be necessary to establish new vegetation in campground areas. | Low/moderate | Variable | Variable | Generally well | Excessive gravel & cobble. | None | Variable (5) | Generally suited |
| 91 | I, II | Generally unsuited. | Excessive slopes & extremely harsh south aspect site. | Irrigation may be required if slope is not limiting. | High | Variable | Variable | Variable | Generally excessive slope & high rock outcrop percent. | Water bar | Generally unsuited (2) (3) | Generally suited (2) (6) |
| 92 | I, II & III | Unsuited | Perennially wet soils. Generally excessive slopes. | None | N/A | N/A | N/A | Poor | Wet soils, high soil creep rate. | Avoid these areas where possible. | N/A | N/A |
| 93 | I, II & III | Unsuited | Solid rock outcrop. | None | N/A | N/A | N/A | Unsuited | N/A | N/A | N/A | N/A |
| 94 | I, II & III | Generally unsuited. | Perennially wet soils. | None | High | Low | High | Poor | Wet soils. | Provide drainage facilities. | Generally unsuited (3) (4) | Generally unsuited (3) (6) |
| 95 | I, II & III | Generally unsuited. | Sites are very sensitive to modification. | Irrigation and fertilization may be necessary to preserve site integrity under heavy use. | High | Variable | Variable | Variable | Variable | Variable | Variable | Variable |
| 99 | I, II & III | Generally unsuited. | Landslide deposits may be unstable. | None | Variable | Variable | Variable | Variable | Variable | Variable | Variable | Variable |

* See map for Environmental Zone Delineations.

(1) High summer temperature and moisture stress conditions may be adverse to vegetation establishment and growth.
(2) Slopes are generally excessive and may limit effectiveness.
(3) Restrictive layer within 30 inches (75 cm.) of surface.
(4) High water table.
(5) Rapid drainage through coarse soils may contaminate adjacent water bodies.
(6) Materials requiring ripping or blasting within 48 inches (120 cm.) of surface.

TABLE OF ENGINEERING INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE* | CLASSIFICATION UNIFIED | CLASSIFICATION AASHO | SUITABILITY FOR USE AS TOPSOIL SOURCE | SUITABILITY AS SAND OR GRAVEL SOURCE | SUITABILITY OF SOIL AS CLAY SOURCE | CONSIDERATIONS FOR ROAD LOCATION AND CONSTRUCTION | METHOD OF EXCAVATION | CUTBANK AND DITCH EROSION POTENTIAL | SUSCEPTIBILITY TO CUTBANK SLOUGH AND RAVEL | ESTIMATED CUTSLOPE RATIO | PROBABILITY OF CUTBANK FAILURE | FAILURE POTENTIAL ON ROAD WASTE AND FILL SLOPES | EROSION POTENTIAL ON ROAD WASTE AND FILL SLOPES | SUITABILITY OF ROAD WASTE AND FILL SLOPES TO SEEDING | LIMITATION OF ROAD WASTE AND FILL SLOPES TO SEEDING | SUGGESTIONS FOR ROAD WASTE AND FILL SLOPE SEEDING | SUITABILITY OF CUTBANKS TO SEEDING | LIMITATIONS TO CUTBANK SEEDING | SUGGESTIONS FOR CUTE SEEDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | II & III | SM | A-1-b | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | Low | Steep | Very stable. | Low | Low | Moderate | Low fertility & AWHC** | (3) | Poor to moderate. | Low fertility & AWHC** | (3) (4) (6) |
| 53 | II & III | SM | A-1-b | Unsuited | Unsuited | Unsuited | None | Ripping & blading. | Low | Low | Steep | Very stable. | Low | Low | Moderate | Low fertility & AWHC** | (3) | Poor to moderate. | Low fertility & AWHC** | (3) (4) (6) |
| 54 | II & III | SM | A-1-b | Unsuited | Unsuited | Unsuited | Very steep, moderately to highly dissected slopes, debris avalanche common. | Ripping & blasting. | Moderate to high. | High | Steep | Moderately stable. | High | Moderate to high. | Moderate to poor. | Low fertility & AWHC** | (3) | Poor | Low fertility & AWHC** | (3) (4) (6) |
| 55 | II & III | SM | A-1-b | Unsuited | Locally suited. | Unsuited | None | Ripping & blading. | Low | Low (1) | Steep | Very stable. | Low | Low | Moderate | Low fertility & AWHC** | (3) | Poor to moderate. | Low fertility & AWHC** | (2) |
| 57 | I, II & III | GC | A-2-7 | Unsuited | Unsuited | Unsuited | None | Ripping & blasting. | Moderate | Low to moderate. | Steep | Stable | Moderate | Moderate to high. | Poor | Low fertility. | (3) | Poor | Low fertility. | (3) (4) (6) |
| 58 | II & III | SMu | A-4-0 | Locally suited. | Unsuited | Locally suited. | Sub-soils may have high plasticity. | Ripping & blasting. | Moderate | Low to moderate. | Moderate | Moderately stable. | Moderate | High | Well | None | (3) | Moderate to well. | Clayey soils. | (3) (4) (6) |
| 59 | II & III | GMd | A-4-0 | Unsuited | Unsuited | Unsuited | Drainage way crossing wash out. | Ripping & blasting. | High | High | Moderate | Unstable | High | High | Well | None | (3) | Well | None | (3) (4) |
| 60 | I & III | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep, highly dissected slopes, channel scour & debris avalanche common. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate to high. | Moderate to high. | Moderate | Steep slopes, ravelling soils. | (3) (5) Zone I | Poor | Shallow soils. | (6) (5) Zone I |
| 60 | II | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep, highly dissected slopes, channel scour & debris avalanche common. | Ripping & blasting. | High | High | Steep | Moderately stable. | High | High | Moderate | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils. | (6) |
| 61 | I & III | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep slopes. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Moderate | Steep slopes, ravelling soils. | (3) (5) Zone I | Poor | Shallow soils. | (6) (5) Zone I |
| 61 | II | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep slopes. | Ripping & blasting. | Moderate to high. | Moderate to high. | Steep | Moderately stable. | Moderate to high. | High | Moderate | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils | (6) (5) Zone I |
| 62 | I & III | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep moderately dissected slopes, channel scour & debris avalanche common. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate to high. | Moderate to high. | Moderate | Steep slopes, ravelling soils. | (3) (5) Zone I | Poor | Shallow soils. | (6) (5) Zone I |
| 62 | II | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Very steep moderately dissected slopes, channel scour & debris avalanche common. | Ripping & blasting. | High | High | Steep | Moderately stable. | High | High | Moderate | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils. | (6) (5) Zone I |
| 63 | II & III | GMu | A-1-b | Unsuited | Unsuited | Unsuited | Moderately steep to steep slopes. | Ripping & blasting. | Moderate | Moderate to low. | Steep | Moderately stable. | Moderate | Moderate to high. | Moderate to well. | Locally steep slopes. | (3) | Poor | Shallow soils. | (6) |
| 68 | I, II & III | GM | A-1-b | Unsuited | Unsuited | Unsuited | Slumps, channel scour, deep, non-cohesive soils. | Blading & ripping. | Moderate | Moderate (1) | Moderate | Moderately stable. | Moderate | Moderate | Well | None | (3) (5) Zone I | Well | None | (3) (4) (5) Zone I |
| 69 | I | GM | A-1-b | Unsuited | Unsuited | Unsuited | Slumps, channel scour, debris avalanche, deep, non-cohesive soils. | Blading & ripping. | Moderate to high. | Moderate to high. | Moderate | Unstable | Moderate to high. | Moderate to high. | Moderate | Steep slopes, ravelling soils. | (3) (5) | Moderate | Sloughing & ravelling soils. | (3) (4) (5) |
| 69 | II & III | GM | A-1-b | Unsuited | Unsuited | Unsuited | Slumps, channel scour, debris avalanche, deep, non-cohesive soils. | Blading & ripping. | High | High | Moderate | Very unstable. | High | High | Moderate | Steep slopes, ravelling soils. | (3) | Moderate | Sloughing & ravelling soils. | (3) (4) |
| 70 | I | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, highly dissected slopes. Debris avalanche hazard. | Blasting | Moderate | Moderate | Steep | Moderately stable. | High to moderate. | Moderate to high. | Poor to moderate. | Steep slopes, ravelling soils. | (3) (5) | Poor | Shallow soils. | (3) (4) (5) (6) |
| 70 | II & III | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, highly dissected slopes. Debris avalanche hazard. | Blasting | Moderate to high. | Moderate to high. | Steep | Moderately stable. | High | High | Poor to moderate. | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils. | (3) (4) (6) |
| 71 | I | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep slopes. | Blasting | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Poor to moderate. | Steep slopes, ravelling soils. | (3) (5) | Poor | Shallow soils. | (3) (4) (5) (6) |
| 71 | II & III | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep slopes. | Blasting | Moderate to high. | Moderate to high. | Steep | Moderately stable. | Moderate to high. | Moderate to high. | Poor to moderate. | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils. | (3) (4) (6) |
| 72 | I | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, moderately dissected slopes. Debris avalanche hazard. | Blasting | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Poor to moderate. | Steep slopes, ravelling soils. | (3) (5) | Poor | Shallow soils. | (3) (4) (5) (6) |
| 72 | II & III | GM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, moderately dissected slopes. Debris avalanche hazard. | Blasting | Moderate to high. | Moderate to high. | Steep | Moderately stable. | High | High | Poor to moderate. | Steep slopes, ravelling soils. | (3) | Poor | Shallow soils. | (3) (4) (6) |
| 73 | I | CL/ML | A-44 | Unsuited | Unsuited | Locally suited. | Moderately steep, highly dissected. | Ripping & blasting. | Low to moderate. | Low | Steep | Stable | Low to moderate. | Low to moderate. | Well | Moderately steep slopes. | (3) (5) | Moderate to well. | None | (3) (4) (5) (6) |
| 73 | II | CL/ML | A-44 | Unsuited | Unsuited | Locally suited. | Moderately steep, highly dissected. | Ripping & blasting. | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate | Well | Moderately steep slopes. | (3) | Moderate to well. | None | (3) (4) (6) |
| 74 | I | CL/ML | A-44 | Unsuited | Unsuited | Locally suited. | Moderately steep topography. | Ripping & blasting. | Low | Low | Steep | Stable | Low | Low | Well | Moderately steep slopes. | (3) (5) | Well | None | (3) (4) (5) (6) |
| 74 | II | CL/ML | A-44 | Unsuited | Unsuited | Locally suited. | Moderately steep topography. | Ripping & blasting. | Moderate to low. | Moderate to low. | Steep | Moderately stable. | Moderate to low. | Moderate | Well | Moderately steep slopes. | (3) | Not rated. | None | (3) (4) (6) |
| 75 | I, II & III | GM | A-1-a | Unsuited | Unsuited | Unsuited | Steep to very steep slopes. Channel scour common. | Blading & blasting. | Moderate to high. | High | Moderate | Moderately stable. | Moderate | Moderate | Poor | Very high rock fragment content, low soil content | (3) (5) | Poor | High rock fragment content. | (3) (4) (5) (6) |
| 77 | I & II | CL | A-6 | Locally suited. | Unsuited | Locally suited. | None | Blading & blasting. | Low | Low (1) | Moderate | Stable | Low | Low to moderate. | Well | None | (3) (5) Zone I | Well | None | (3) (4) (6) (5) Zone I |
| 80 | I & III | SM | A-4 | Unsuited | Unsuited | Unsuited | Steep slopes, erodible soils. | Blading & blasting. | Moderate | Moderate to high. | Steep | Moderately stable. | Moderate | Moderate to high. | Moderate | Infertile, ravelling soils. | (3) (5) Zone I | Poor | Shallow, ravelling infertile soils. | (3) (4) (6) (5) Zone I |
| 80 | II | SM | A-4 | Unsuited | Unsuited | Unsuited | Steep slopes, erodible soils. | Blading & blasting. | High | High | Steep | Moderately stable. | Moderate to high. | High | Moderate | Infertile, ravelling soils. | (3) | Poor | Shallow, ravelling infertile soils. | (3) (4) (6) |
| 81 | II & III | GM | A-1-a | Unsuited | Unsuited | Unsuited | Occassional channel scour. | Blading & ripping. | Moderate | Moderate to low. | Moderate | Stable | Moderate to low. | Moderate | Moderate to well. | Infertile soils. | (3) | Moderate | Infertile soils. | (3) (4) |
| 82 | I & III | SM | A-5 | Unsuited | Locally suited for limited uses (Grussic) | Unsuited | Steep to very steep slopes, erodible soils. | Blading & blasting. | Moderate | Moderate to high. | Steep | Moderately stable. | Moderate | Moderate to high. | Moderate to well. | Infertile, ravelling soils. | (3) (5) Zone I | Moderate | Infertile, ravelling soils. | (3) (4) (6) (5) Zone I |
| 82 | II | SM | A-5 | Unsuited | Locally suited for limited uses (Grussic) | Unsuited | Steep to very steep slopes, erodible soils. | Blading & blasting. | High | High | Steep | Moderately stable. | Moderate to high. | High | Moderate to well. | Infertile, ravelling soils. | (3) | Moderate | Infertile, ravelling soils. | (3) (4) (6) |

*See map for Environmental Zone Delineations.
** AWHC refers to Available Water Holding Capacity.

TABLE OF ENGINEERING INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE* | CLASSIFICATION UNIFIED | CLASSIFICATION AASHO | SUITABILITY FOR USE AS TOPSOIL SOURCE | SUITABILITY AS SAND OR GRAVEL SOURCE | SUITABILITY OF SOIL AS CLAY SOURCE | CONSIDERATIONS FOR ROAD LOCATION AND CONSTRUCTION | METHOD OF EXCAVATION | CUTBANK AND DITCH EROSION POTENTIAL | SUSCEPTIBILITY TO CUTBANK SLOUGH AND RAVEL | ESTIMATED CUTSLOPE RATIO | PROBABILITY OF CUTBANK FAILURE | FAILURE POTENTIAL ON ROAD WASTE AND FILL SLOPES | EROSION POTENTIAL ON ROAD WASTE AND FILL SLOPES | SUITABILITY OF ROAD WASTE AND FILL SLOPES TO SEEDING | LIMITATION OF ROAD WASTE AND FILL SLOPES TO SEEDING | SUGGESTIONS FOR ROAD WASTE AND FILL SLOPE SEEDING | SUITABILITY OF CUTBANKS TO SEEDING | LIMITATIONS TO CUTBANK SEEDING | SUGGESTIONS FOR CUTBAN SEEDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 83 | I & III | SM | A-5 | Unsuited | Locally suited for limited uses (Grussic) | Unsuited | Erodible soils. | Blading & blasting. | -- | Low (1) | Steep | Stable | Low | Low | Well to moderate. | Infertile soils. | (3) (5) Zone I | Moderate | Infertile soils. | (3) (4) (5) Zone I |
| 83 | II | SM | A-5 | Unsuited | Locally suited for limited uses (Grussic) | Unsuited | Erodible soils. | Blading & blasting. | Moderate to low. | Low (1) | Steep | Stable | Low to moderate. | Moderate to low. | Well to moderate. | Infertile soils. | (3) | Moderate | Infertile soils. | (3) (4) |
| 84 | II & III | SM | A-5 | Unsuited | Locally suited or limited uses (Grussic) | Unsuited | None | Blading & blasting. | Moderate to low. | Low (1) | Steep | Stable | Moderate to low. | Moderate to low. | Well | None | (3) | Moderate to well. | None | (3) (4) |
| 85 | I | SM | A-2-4 | Unsuited | Unsuited | Unsuited | Steep broken topography, channel scour. | Blading & blasting. | Moderate to high. | Moderate to high. | Steep | Moderately stable. | Moderate to high. | High to moderate. | Poor | Steep slopes, high ravel. | (3) (5) | Poor | High ravel rates. | (3) (4) (5) |
| 86 | I | CL/ML | A-4-0 | Locally suited. | Unsuited | Locally suited. | None | Blading & ripping. | Low | Low (1) | Steep | Stable | Low | Low | Well | None | (3) (5) | Well | None | (3) (4) (5) |
| 87 | I | SM | A-2-4 | Unsuited | Unsuited | Unsuited | Highly dissected, steep to very steep, broken slopes, channel scour. | Blading & blasting. | High | High | Steep | Moderately stable. | High | High | Poor | Steep slopes, high ravel. | (3) (5) | Poor | High ravel rates. | (3) (4) (5) |
| 88 | I | GM | A-1-a | Unsuited | Unsuited | Unsuited | Steep to very steep slopes, deep, cohesionless soils. | Blading & blasting. | Moderate | Moderate | Moderate | Moderately stable. | Moderate | Moderate | Poor | Infertile soils, steep slopes, high ravel. | (3) (5) | Poor | High ravel rates. | (3) (4) (5) |
| 88 | II & III | GM | A-1-a | Unsuited | Unsuited | Unsuited | Steep to very steep slopes, deep, cohesionless soils. | Blading & blasting. | Moderate to high. | Moderate to high. | Moderate | Somewhat stable to unstable. | Moderate | Moderate to high. | Poor | Infertile soils, steep slopes, high ravel. | (3) | Poor | High ravel rates. | (3) (4) |
| 89 | I | SM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, highly dissected slopes. | Blasting | Moderate | Moderate | Steep | Moderately stable. | Moderate | Moderate to high. | Poor | Infertile soils, steep slopes, high ravel. | (3) (5) | Poor | Shallow, infertile soils. | (3) (4) (5) (6) |
| 89 | II & III | SM | A-1-b | Unsuited | Unsuited | Unsuited | Steep to very steep, highly dissected slopes. | Blasting | Moderate to high. | Moderate to high. | Steep | Moderately stable. | Moderate to high. | High | Poor | Infertile soils, steep slopes, high ravel. | (3) | Poor | Shallow, infertile soils. | (3) (4) (6) |
| 90 | I & II | Not rated | Not rated | Locally suited. | Locally suited. | Locally suited. | None | Variable | Not rated. | Not rated. | Not rated. | Very stable. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 91 | I & II | Not rated | Not rated | Unsuited | Unsuited | Unsuited | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 92 | I, II & III | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Perennially wet. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 93 | I, II & III | Not rated | Not rated | Unsuited | Unsuited | Unsuited | Nearly all rock. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 94 | I, II & III | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Perennially wet. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Unsuited | Rock | Not rated. | Unsuited | Rock | Not rated. |
| 95 | I, II & III | Not rated | Not rated | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 99 | I | Not rated | Not rated | Variable | Unsuited | Variable | Generally high hazard of slumps & rotational failures. | Not rated. | Moderate to high. | Moderate to high. | Not rated. | Moderately stable to very unstable. | Moderate to high. | Moderate to high. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |
| 99 | II & III | Not rated | Not rated | Variable | Unsuited | Variable. | Generally high hazard of slumps & rotational failures. | Not rated. | High | High | Not rated. | Unstable to very unstable. | High | High | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. | Not rated. |

*See map for Environmental Zone Delineations.
** AWHC refers to Available Water Holding Capacity.

* Refers to Available Water Holding Capacity (AWHC)

FOOTNOTES:

(1) Cutbanks less then 10 feet (3 meters).
(2) Seeding generally not necessary for resource protection.
(3) Sands and gravels may have high pumice content.
(4) Grass seeding may increase ravel due to livestock traffic.
(5) Seed grass, mulch and fertilize.
(6) Leave cutslopes rough to catch seed and fertilizer.
(7) High elevation adverse climate, short growing season.
(8) Seed grass or legume species adapted to short adverse growing season.
(9) Seed grass or legume species adapted to droughty conditions.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (4) N Aspect | S Aspect |
|---|---|---|---|---|---|---|---|---|
| 52 | II | Moderate to high | Stoney soils, strong brush competition. | PSME, ABCO | ---- | PSME | III, IV | IV |
| 52 | III | Moderate | Stoney soils, strong brush & grass competition. (1) | ABMA, ABCO | ----- | ABMA | III | III |
| 53 | II | Moderate to high | Stoney soils, strong brush competition. | PSME, ABCO | ----- | PSME | III, IV | IV |
| 53 | III | Moderate | Stoney soils, strong brush & grass competition. (1) | ABMA, ABCO | ----- | ABMA | III, IV | III, IV |
| 54 | II | Moderate | Very steep, stoney soils, strong brush competition. | PSME, ABCO | ----- | PSME | III, IV | IV |
| 54 | III | Moderate to low | Very steep, stoney soils, strong brush competition. (1) | ABMA, ABCO | ----- | ABMA | III, IV | III, IV |
| 55 | II | High | Stoney soils, strong brush competition. | PSME, ABCO | Gentle slopes allow flexibility in planting & harvesting techniques. | PSME | III | III |
| 55 | III | Moderate to high | Stoney soils, strong brush competition. (1) | ABCO, ABMA | Gentle slopes allow flexibility in planting & harvesting techniques. | ABCO | III, II | III, II |
| 57 | I, II & III | Low | Ultra-mafic soils minerology severly inhibits growth of most plant species, shallow soils. | PIJE, LIDE | Severe soil limitations to regeneration. | PIJE | V | V |
| 58 | II | High, locally moderate | Brush competition in localized areas. | PSME, ABCO, PIPO, PILA | Soils compact easily when moist. | PSME | IV, III | IV, III |
| 58 | III | Moderate | Brush competition in localized areas. (1) | ABCO, ABMA | Soils compact easily when moist. | ABCO | III, IV | III, IV |
| 59 | II | Moderate to high | Brush competition locally, moderately steep slopes. | PSME, ABCO, PIPO, PILA | Unstable areas are common on this landtype. | PSME | IV, III | IV, III |
| 59 | III | Moderate | Brush competition locally, moderately steep slopes. (1) | ABCO, ABMA | Unstable areas are common on this landtype. | ABCO | III | III |
| 60 | I | Low | Shallow, gravelly soils, steep slopes. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 60 | II | Moderate | Shallow, gravelly soils, steep slopes. | PSME | Up to 20% rock outcrop. | PSME | III | III, IV |
| 60 | III | Moderate | Shallow, gravelly soils, steep slopes. (1) | ABCO, ABMA | Up to 20% rock outcrop. | ABCO | III | III |

* See map for Environmental Zone Delineations.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SITE CLASS (4) N Aspect | DOMINANT SITE CLASS (4) S Aspect |
|---|---|---|---|---|---|---|---|---|
| 61 | I | Low | Shallow, gravelly soils, steep slopes. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 61 | II | Moderate | Shallow, gravelly soils, steep slopes. | PSME | Up to 20% rock outcrop. | PSME | III | III, IV |
| 61 | III | Moderate | Shallow, gravelly soils, steep slopes. (1) | ABCO, ABMA | Up to 20% rock outcrop. | ABCO | III | III |
| 62 | I | Low | Shallow, gravelly soils, steep slopes. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 62 | II | Moderate | Shallow, gravelly soils, steep slopes. | PSME | Up to 20% rock outcrop. | PSME | III | III, IV |
| 62 | III | Moderate | Shallow, gravelly soils, steep slopes. (1) | ABCO, ABMA | Up to 20% rock outcrop. | ABCO | III | III |
| 63 | II | High to moderate | Shallow, gravelly soils. | PSME | Up to 20% rock outcrop. | PSME | III | III |
| 63 | III | Moderate | Shallow, gravelly soils. (1) | ABCO, ABMA | Up to 20% rock outcrop. | ABCO | III | III |
| 68 | I | Moderate | Gravelly soils. (2) | PIPO, PSME | ----- | PIPO | IV, III | IV |
| 68 | II | High | Gravelly soils. | PSME | ----- | PSME | II, III | III |
| 68 | III | Moderate | Gravelly soils. (1) | ABCO, ABMA | ----- | ABCO | II, III | III |
| 69 | I | Moderate | Gravelly soils, steep slopes. (2) | PIPO, PSME | Unstable slopes. | PIPO | IV, III | IV |
| 69 | II | Moderate | Gravelly soils, steep slopes. | PSME | Very unstable slopes. | PSME | II, III | III |
| 69 | III | Moderate | Gravelly soils, steep slopes. (1) | ABCO, ABMA | Very unstable slopes. | ABCO | II, III | III |
| 70 | I | Low | Shallow soils, steep slopes. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 70 | II | Moderate | Shallow soils, steep slopes. | PSME, PIPO ABCO, PILA | Up to 20% rock outcrop. | PSME | IV, III | IV |
| 70 | III | Moderate | Shallow soils, steep slopes. (1) | ABMA, ABCO | Up to 20% rock outcrop. | ABMA | IV | IV |
| 71 | I | Low | Shallow soils, steep slopes. (2) | PIPO, PSME | (3) | PIPO | IV | V |
| 71 | II | Moderate | Shallow soils, steep slopes. | PSME, ABCO, PIPO, PILA | ----- | PSME | IV, III | IV |

* See map for Environmental Zone Delineations.



TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SITE CLASS (4) N Aspect | DOMINANT SITE CLASS (4) S Aspect |
|---|---|---|---|---|---|---|---|---|
| 71 | III | Moderate | Shallow soils, steep slopes. (1) | ABMA, ABCO | ----- | ABMA | IV | IV |
| 72 | I | Low | Shallow soils, steep slopes. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 72 | II | Moderate | Shallow soils, steep slopes. | PSME, ABCO, PIPO, PILA | Up to 20% rock outcrop. | PSME | III, IV | IV |
| 72 | III | Moderate | Shallow soils, steep slopes. (1) | ABMA, ABCO | Up to 20% rock outcrop. | ABMA | III, IV | III, IV |
| 73 | I | Low, locally moderate | Moderately steep slopes. (2) | PIPO, PSME | (3) | PIPO | IV, III | IV, V |
| 73 | II | Moderate to high | Moderately steep slopes. | PSME, PIPO, ABCO, PILA | ----- | PSME | IV, III | IV |
| 74 | I | Low, locally moderate | Moderately steep slopes. (2) | PIPO, PSME | (3) | PIPO | IV, III | IV, V |
| 74 | II | Moderate to high | Moderately steep slopes. | PSME, PIPO, ABCO, PILA | ----- | PSME | IV, III | IV |
| 75 | I | Moderate | Steep slopes, cobbly soils. (2) | PIPO, PSME | (3) | PIPO | IV, III | IV |
| 75 | II | Moderate | Steep slopes, cobbly soils. | PSME, ABCO, PIPO | ----- | PSME | IV, III | IV, III |
| 75 | III | Moderate | Steep slopes, cobbly soils. (1) | ABCO, ABMA | ----- | ABCO | III | III |
| 77 | I | Moderate | (2) | PIPO, PSME | Gentle slopes, however, soils are susceptible to compaction. | PIPO | IV | V |
| 77 | II | Moderate | ----- | PSME, PIPO ABCO, PILA | Gentle slopes, however, soils are susceptible to compaction. | PSME | IV, III | IV |
| 80 | I | Low | Droughty soils, brush competition, steep slopes. (2) | PIPO, PSME | These soils can withstand only minor disturbance without suffering significant loss in productivity & significant increases in sediment yield. (3) | PIPO | IV | V |
| 80 | II | Moderate | Droughty soils, brush competition, steep slopes. | PSME, PILA PIPO | These soils can withstand only minor disturbance without suffering significant loss in productivity & significant increases in sediment yield. | PSME | IV | IV |
| 80 | III | Moderate | Droughty soils, brush competition, steep slopes. (1) | ABMA, ABCO | Major disturbance may result in high sediment production. | ABMA | IV, III | IV, III |
| 81 | II | High | Cobbly soils, brush competition. | PSME | Major disturbance may result in high sediment production. | PSME | III, IV | III, IV |

* See map for Environmental Zone Delineations.

TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (4) N Aspect | S Aspect |
|---|---|---|---|---|---|---|---|---|
| 81 | III | High | Cobbly soils, strong brush & grass competition. (1) | ABCO, ABAA | Major disturbance may result in high sediment production. | ABCO | III | III |
| 82 | I | Low | Droughty soils, brush competition, steep slopes. (2) | PIPO, PSME | These soils can withstand only minor disturbance without suffering significant loss in productivity & significant increases in sediment yield. (3) | PIPO | IV | V |
| 82 | II | Moderate | Droughty soils, strong brush competition, steep slopes. | PSME, PILA, PIPO | These soils can withstand only minor disturbance without suffering significant loss in productivity & significant increases in sediment yield, soils are also susceptible to mass movement. | PSME | IV | IV |
| 82 | III | Moderate | Droughty soils, strong brush & grass competition, steep slopes. (1) | ABMA, ABCO | These soils can withstand only minor disturbance without suffering significant loss in productivity & significant increases in sediment yield, soils are also susceptible to mass movement. | ABMA | IV | IV |
| 83 | I | Low | Shallow, droughty soils, strong brush competition. (2) | PIPO | Slopes over 25% are very erodible. (3) | PIPO | IV | V |
| 83 | II | Moderate to low | Shallow, droughty soils, strong brush competition. | PSME, PILA, PIPO | Slopes over 25% are very erodible. | PSME | IV | IV |
| 83 | III | Low to moderate | Shallow, droughty soils, strong brush & grass competition. (1) | ABMA, ABCO | Slopes over 25% are very erodible. | ABMA | IV | IV |
| 84 | II | Moderate | Droughty soils, strong brush competition. | PSME, PILA, PIPO | Slopes over 25% are very erodible. | PSME | IV | IV |
| 84 | III | Moderate | Droughty soils, strong brush competition. (1) | ABCO, ABMA | Slopes over 25% are very erodible. | ABCO | III | III |
| 85 | I | Low to moderate | Droughty soils, strong brush competition, steep slopes. (2) | PIPO, PSME | Soils are extremely erodible. (3) | PSME | IV | IV, V |
| 86 | I | Moderate to low | Strong brush competition. (2) | PIPO, PSME | (3) | PIPO | IV, III | IV |
| 87 | I | Low to moderate | Droughty soils, brush competition, steep slopes. (2) | PIPO, PSME | Soils are extremely erodible. (3) | PSME | IV | IV, V |
| 88 | I | Low | Brush competition, steep slopes, cobbly soils. (2) | PIPO, PSME | Soils are subject to mass wasting. (3) | PSME | IV | V |

* See map for Environmental Zone Delineations.



TABLE OF TIMBER MANAGEMENT INTERPRETATIONS

| LANDTYPE NUMBER | ENVIRONMENTAL ZONE * | POTENTIAL FOR TIMBER REGENERATION | LIMITS TO REGENERATION | SUGGESTED PLANTING SPECIES | CONSIDERATIONS FOR REGENERATION AND MANAGEMENT | DOMINANT TIMBER SPECIES | DOMINANT SPECIES SITE CLASS (4) N Aspect | S Aspect |
|---|---|---|---|---|---|---|---|---|
| 88 | II | Moderate | Brush competition, steep slopes, cobbly soils. | PSME, PIPO, PILA, ABCO | Soils are subject to mass wasting. | PSME | IV, III | IV |
| 88 | III | Moderate | Brush competition, steep slopes, cobbly soils. (1) | ABCO, ABMA | Soils are subject to mass wasting. | ABCO | IV, III | IV |
| 89 | I | Low | Strong brush competition, steep slopes, shallow, droughty soils. (2) | PIPO, PSME | Up to 20% rock outcrop. (3) | PIPO | IV | V |
| 89 | II | Low to moderate | Strong brush competition, steep slopes, shallow, droughty soils. | PSME, PIPO | Up to 20% rock outcrop, very erodible soils. | PSME | IV | IV, V |
| 89 | III | Moderate | Strong brush competition, steep slopes, shallow, droughty soils. (1) | ABCO, ABMA | Up to 20% rock outcrop, very erodible soils. | ABCO | IV, III | IV, III |
| 90 | I | Moderate to high | Cobbly, droughty soils, strong brush competition. (2) | PIPO, PSME | (3) | PSME | IV | IV |
| 90 | II | High | Cobbly, somewhat droughty soils, strong brush competition. | PSME, PIPO ABCO | ----- | PSME | IV, III | IV, III |

The remaining landtypes are non-forested.



* See map for Environmental Zone Delineations.

(1) High elevation climatic conditions limit seedling establishment; also may limit access and planting season.
(2) High summer temperature and moisture stress conditions have strongly adverse effects upon regeneration efforts, especially on southerly aspects. Leave shade cover to protect seedlings, particularly for species other than Ponderosa Pine.
(3) Douglas-fir site class ratings are based upon information in the U.S.D.A. Technical Bulletin No. 201 by R. E. McArdle, W. H. Meyer, and D. Bruce. All other species are rated in accordance with cubic foot site class categories found in the "Field Instructions for Integrated Forest Survey and Timber Management Inventories in Oregon, Washington and California", U.S.D.A., Forest Service, R-6.

TABLE OF TIMBER INTERPRETATIONS

POTENTIAL IMPACTS OF HARVESTING TECHNIQUES ON VARIOUS SITE QUALITIES

| LANDTYPE NUMBER | ENVIRON-MENTAL ZONE* | POTENTIAL IMPACTS FROM TRACTOR YARDING | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -NO SUSPENSION- | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -FULL SUSPENSION- | TYPE OF DAMAGE |
|---|---|---|---|---|---|---|---|
| 52, 55 & 90 | I, II & III | Low | Loss in site quality due to moderate compaction & slight erosion on skid trails & landings. | Low | Log skidding & gouging disturbs soil structure & duff cover. Erosion potential is increased. | Low | Insignificant damage expected from this yarding procedure. |
| 59 | II & III | High | Severe loss in site quality due to erosion where soils are disturbed & compacted. Damage would extend beyond skid roads & landings. (2) | Moderate | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased potential for erosion. (2) | Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 60, 62, 70, 72 88 & 89 | I & III | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid trails & landings. (3) | Moderate | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased potential for erosion. (1) (3) | Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 60, 62 70, 72 88 & 89 | II | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid trails & landings. (2) | High | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased potential for erosion. (1) (2) | Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 61, 71, 75, 54 & 57 | I & III | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid trails & landings. (3) | Moderate | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased potential for erosion. (1) (3) | Low to Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 61, 71, 54, 75 & 57 | II | High | Severe loss in site quality due to ravel & erosion where soils are disturbed & compacted. Damage would extend beyond skid trails & landings. (2) | High | Log skidding & gouging disturbs soil & duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased potential for erosion. (1) (2) | Moderate | Insignificant damage expected from this yarding procedure. (1) |
| 69 | I, II & III | High | Large scale mass wasting may be set off by alteration of surface or sub-surface drainage as could be expected using this harvest technique. Such damage would be extensive & very difficult to contain. (2) (3) | High | Severe loss in site quality due to mass wasting as a result of root tensile strength deterioration following logging & tree removal. Roading in this terrain will contribute significantly to the potential for mass wasting. (2) (3) | High | Severe loss in site quality due to mass wasting as a result of root tensile strength deterioration following logging & tree removal. Roading in this terrain will contribute significantly to the potential for mass wasting. |
| 73 | I | High | Severe loss in site quality due to compaction & subsequent erosion. Run-off potential is high on these steep slopes. (3) | Low to Moderate | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. (3) | Low | Insignificant damage expected from this yarding procedure. |

*See map for Environmental Zone Delineations.



TABLE OF TIMBER INTERPRETATIONS

POTENTIAL IMPACTS OF HARVESTING TECHNIQUES ON VARIOUS SITE QUALITIES

| LANDTYPE NUMBER | ENVIRON-MENTAL ZONE* | POTENTIAL IMPACTS FROM TRACTOR YARDING | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -NO SUSPENSION- | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -FULL SUSPENSION- | TYPE OF DAMAGE |
|---|---|---|---|---|---|---|---|
| 73 | II | High | Severe loss in site quality due to compaction & subsequent erosion. Run-off potential is high on these steep slopes. (2) | Low | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. (2) | Low | Insignificant damage expected from this yarding procedure. |
| 74 | I | High to Moderate | Moderate to severe loss in site quality due to compaction on heavy traffic areas. Exposed soils will erode. (3) | Low | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. (3) | Low | Insignificant damage expected from this yarding procedure. |
| 74 & 53 | II & III | High | Moderate to severe loss in site quality due to compaction on heavy traffic areas. Exposed soils will erode. (2) (3) | Moderate to Low | Log skidding & gouging loosens soil & disturbs duff layers. On these steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. (2) (3) | Low | Insignificant damage expected from this yarding procedure. |
| 77 & 58 68 | I, II & III | Low | Slight to moderate loss in site quality due to compaction on heavy traffic areas. Exposed soils may erode. | Low | Log skidding & gouging disturbs soil & duff layers. Potential for erosion may be increased. | Low | Insignificant damage expected from this yarding procedure. |
| 80 & 82 | I & III | High | Duff layer disturbance & soil displacement caused by tractor turning & gouging on these steep slopes will result in very high erosion & ravel potentials. Loss of root tensile strength following logging may contribute to instability. Damage will extend beyond skid trails & landings. (3) | High | Log skidding & gouging disturbs protective duff layer & loosens soil. On these steep granitic slopes, water may be concentrated in yarding furrows, the total result will be greatly increased rates of erosion & slope ravel. Loss of root tensile strength following logging may contribute to instability. (3) | Low | Insignificant damage expected from this yarding procedure. Loss of root tensile strength following logging may contribute to instability. (1) |
| 80 & 82 | II | High | Duff layer disturbance & soil displacement caused by tractor turning & gouging on these steep slopes will result in very high erosion & ravel potentials. Loss of root tensile strength following logging may contribute to instability. Damage will extend beyond skid trails & landings. (2) | High | Log skidding & gouging disturbs protective duff layer & loosens soil. On these steep granitic slopes, water may be concentrated in yarding furrows, the total result will be greatly increased rates of erosion & slope ravel. Loss of root tensile strength following logging may contribute to instability. (2) | Moderate to low | Insignificant damage expected from this yarding procedure. Loss of root tensile strength following logging may contribute to instability. (1) |
| 81, 83 84 & 86 | I, II & III | Moderate | Skid trails & landings on these granitic soils will ravel & erode considerably, even on moderate to gently slopes. Damage will extend beyond landings & skid roads. (2) (3) | Low | Log skidding & gouging disturbs soil structure & protective duff cover. Erosion potential is increased & productivity may be impared. (2) (3) | Low | Insignificant damage expected from this yarding procedure. |

*See map for Environmental Zone Delineations.

TABLE OF TIMBER INTERPRETATIONS

POTENTIAL IMPACTS OF HARVESTING TECHNIQUES ON VARIOUS SITE QUALITIES

| LANDTYPE NUMBER | ENVIRON-MENTAL ZONE* | POTENTIAL IMPACTS FROM TRACTOR YARDING | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -NO SUSPENSION- | TYPE OF DAMAGE | POTENTIAL IMPACTS FROM CABLE SYSTEM -FULL SUSPENSION- | TYPE OF DAMAGE |
|---|---|---|---|---|---|---|---|
| 85 & 87 | I | High | Duff layer disturbance & soil displacement caused by tractor turning & gouging on these steep slopes will result in very high erosion & ravel potentials. Damage will extend beyond skid trails & landings. (3) | High | Log skidding & gouging disturbs protective duff layer & loosens soil. On these steep diorite slopes, water may be concentrated in yarding furrows. The total result will be greatly increased rates of erosion & slope ravel. (3) | Moderate to Low | Insignificant damage expected from this yarding procedure. (1) |
| 91, 92, 93, 94 & 95 | I, II & III | Not rated | Not rated. | Not rated | Not rated | Not rated | Not rated |
| 99 | I, II & III | High (High degree of variability) | On this benchy, landslide topography, instability may be reactivated where surface and/or sub-surface hydrology is altered by heavy surface traffic. Site quality may be significantly reduced by compaction, which also contributes to run-off & erosion potentials. (2) (3) | Moderate to High (High degree of variability) | Log skidding & gouging loosens soil & disturbs duff layers. On steep slopes, water may be concentrated in yarding furrows, resulting in increased erosion potential. (2) (3) | Low to High (High degree of variability) | Insignificant damage expected from this yarding procedure. (1) |

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*See map for Environmental Zone Delineations.

(1) Major impact is from roads. Damage increases in proportion to increasing steepness and degree of dissection.
(2) Climatic conditions in Environmental Zone II are conducive to high erosion potentials.
(3) Harsh climatic conditions in Environmental Zones I & III may retard vegetative recovery following logging.

TABLE OF LANDTYPE CHARACTERISTICS

| LANDTYPE NUMBER | PHYSIOGRAPHIC CHARACTERISTICS: PHYSIOGRAPHIC PROVINCE/ SUB-PROVINCE | PHYSIOGRAPHIC CHARACTERISTICS: LANDFORM AND POSITION DESCRIPTION | PHYSIOGRAPHIC CHARACTERISTICS: ROCK OUTCROP PERCENT | PHYSIOGRAPHIC CHARACTERISTICS: SLOPE RANGE PERCENT | SOIL CHARACTERISTICS: SOIL PROFILE TYPE | SOIL CHARACTERISTICS: SOIL TEXTURAL RANGE | SOIL CHARACTERISTICS: THICKNESS OF SURFACE LAYERS (in.) (cm.) | SOIL CHARACTERISTICS: DEPTH TO SUB-STRATUM (in.) (cm.) | SOIL CHARACTERISTICS: NATURE OF SUB-STRATUM | SOIL CHARACTERISTICS: DRAINAGE CLASS | SOIL CHARACTERISTICS: INTRINSIC PRODUCTIVE POTENTIAL | SOIL CHARACTERISTICS: ROOTING DEPTH (in.) (cm.) | SOIL CHARACTERISTICS: ORIGIN OF SOIL MATERIAL | VEGETATIVE AND CLIMATOLOGICAL CHARACTERISTICS: ENVIRONMENTAL ZONE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | Klamath Mountains/ Glaciated. | Smooth, rolling, gentle to moderately steep glacial depositional surfaces. | 5-10% | 15-45% | 5200 | vgsl, vgl, vksl & vkl | 10-15" (25-40) | 25-45" (65-115) | Moderately to strongly compacted glacial till. | Well to excessive. | Moderate | 25-45" (65-115) | Glacial deposits. | II & III |
| 53 | Klamath Mountains/ Glaciated. | Smooth, sideslope glacial depositional surfaces associated with steep, concave cirque basins and headwall areas. | 0-10% | 45-70% | 5200 | vgsl, vgl, vksl & vkl | 10-15" (25-40) | 25-45" (65-115) | Moderately to strongly compacted glacial till. | Well to excessive. | Moderate | 25-45" (65-115) | Glacial deposits. | II & III |
| 54 | Klamath Mountains/ Glaciated. | Moderately to highly dissected surfaces associated with very steep glacial trough walls. | 10-15% | 60-90% | 5200 | vgsl, vgl, vksl & vkl | 10-15" (25-40) | 25-45" (65-115) | Moderate to weakly compacted glacial till & unconsolidated colluvium. | Well to excessive. | Moderate | 25-60" (65-150) | Glacial & colluvial deposits. | II & III |
| 55 | Klamath Mountains/ Glaciated. | Flat to gently sloping glacial trough bottoms and lower concave side slopes. | 0-5% | 10-40% | 5200 | vgsl, vgl, vksl & vkl | 10-15" (25-40) | 25-49" (65-115) | Moderately to weakly compacted glacial till & alluvium. | Well | Moderate | 25-50" (65-125) | Glacial & alluvial deposits. | II & III |
| 57 | Klamath Mountains/ ultra-basic intrusive bodies, non-glaciated. | Gentle to very steep slopes & ridgetops which are smooth to moderately dissected and are associated with Serpentine & Peridotite rock types. | 20-25+% | 20-70% | 5700 | egl & egcl | 5-10" (10-25) | 24-48" (60-120) | Moderately hard ultra mafic igneous rock types. | Well | Low | 15-30" (40-75) | Residuum & colluvium. | I, II & III |
| 58 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Nearly flat to gently rolling surfaces occurring along fault zones or in association with mafic and ultra-mafic rock type intrusions. | 5-10% | 10-45% | 5800 | gcl, gc, vkl & vkcl | 10-15" (25-40) | 60-80+" (150-205) | Soft to moderately hard mafic, ultra mafic, & fault zone metamorphic rocks. | Well | Moderate to high. | 40-60" (100-150) | Residuum & colluvium. | II & III |
| 59 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Moderately dissected, somewhat rounded steep slopes occurring along fault zones or in association with mafic & ultra-mafic rock type intrusions & colluvial deposits. | 10-15% | 45-75% | 5900 | vkl & vkcl | 15-20" (40-50) | 60-80+" (150-205) | Colluvial deposits from mafic, ultra-mafic & fault zone metamorphic rocks. | Well | Moderate to high. | 40-80" (100-205) | Colluvium | II & III |
| 60 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Highly dissected, long, very steep, straight side slopes. | 15-20% | 60-90% | 6000 | vgl, egl, & vgsl | 5-10" (10-25) | 15-40" (40-100) | Moderately hard, highly fractured & foliated graphite, mica, talc & green schists. | Well | Moderate | 15-40" (40-100) | Colluvium | I, II & III |
| 61 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Slightly to moderately dissected, long, very steep straight side slopes. | 15-20% | 60-90% | 6000 | vgl, egl, & vgsl | 5-10" (10-25) | 15-40" (40-100) | Moderately hard, highly fractured & foliated graphite, mica, talc & green schists. | Well | Moderate | 15-40" (40-100) | Colluvium | I, II & III |
| 62 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Moderately dissected, long, very steep slopes associated with concave headwater areas. | 15-20% | 60-90% | 6000 | vgl, egl, & vgsl | 5-10" (10-25) | 15-40" (40-100) | Moderately hard, highly fractured & foliated granite, mica, talc & green schists. | Well | Moderate | 15-40" (40-100) | Colluvium | I, II & III |
| 63 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Smooth, rounded, moderately steep to steep upper slopes & ridges. | 15-20% | 25-55% | 6000 | vgl, egl, & vgfsl | 10-15" (25-40) | 20-40" (50-100) | Moderately hard, highly fractured & foliated graphite and mica schists. | Well | Moderate to high. | 20-40" (50-100) | Colluvium | II & III |
| 68 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Hummocky, gently rolling to moderately steep, landslide terrain mid-slope positions. | 0-5% | 15-45% | 6900 | vgl, egl, & vgfsl | 10-15" (25-40) | 45-80+" (115-205) | Loose, unconsolidated landslide material and colluvium from schist. | Moderately to somewhat poorly. | Moderate to high. | 40-60" (100-150) | Landslide material. | I, II & III |
| 69 | Klamath Mountains/ Paleazoic schist bodies, non-glaciated. | Uneven steep to very steep, landslide headwall & toe slope positions. | 5-10% | 45-80% | 6900 | vgl, egl, & vgfsl | 10-15" (25-40) | 45-80+" (115-205) | Loose, unconsolidated landslide material and colluvium from schist. | Well to moderately well. | Moderate to high. | 40-60" (100-150) | Landslide material. | I, II & III |
| 70 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Highly dissected, long, steep to very steep straight side slopes. | 15-20% | 55-80+% | 7000 | gl, gcl, vgl & vgcl | 5-10" (10-25) | 24-48" (60-120) | Hard, moderately hard, & locally soft, highly fractured metamorphic rocks of the Applegate Group. | Well | Moderate | 24-48" (60-120) | Colluvium | I, II & III |
| 71 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Slight to moderately dissected, steep to very steep straight side slopes. | 10-15% | 55-80+% | 7000 | gl, gcl, vgl & vgcl | 5-10" (10-25) | 24-48" (60-120) | Hard, moderately hard, & locally soft, highly fractured metamorphic rocks of the Applegate Group. | Well | Moderate | 24-48" (60-120) | Colluvium | I, II & III |
| 72 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Moderately dissected, steep to very steep, concave headwater areas. | 15-20% | 55-80+% | 7000 | gl, gcl, vgl & vgcl | 5-10" (10-25) | 24-48" (60-120) | Hard, moderately hard, & locally soft, highly fractured metamorphic rocks of the Applegate Group. | Well | Moderate | 24-48" (60-120) | Colluvium | I, II & III |
| 73 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Highly dissected, moderately steep to steep, convex & rounded side slopes & ridges. | 10-15% | 35-65% | 7400 | gl, gcl & c | 10-15" (25-40) | 40-60" (100-150) | Moderately hard to soft highly fractured metamorphic rock of the Applegate Group. | Well | Moderate to high. | 40-60" (100-150) | Residuum & colluvium. | I & II |
| 74 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Smooth, moderately steep to steep, convex & rounded side slopes & ridges. | 5-10% | 35-65% | 7400 | gl, gcl & c | 10-15" (25-40) | 40-60" (100-150) | Soft to moderately hard highly fractured metamorphic rocks of the Applegate Group. | Well | Moderate to high. | 40-60" (100-150) | Residuum & colluvium. | I & II |
| 75 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Side slope & toe slope colluvial deposits occurring below rock outcrops & along stream dissections on steep to very steep slopes. | 10-15% | 55-80+% | 7500 | egl, egsl, ekl & eksl | 5-15" (10-40) | 50-75" (125-190) | Very deep colluvial deposits originating from metamorphic rocks of the Applegate Group. | Well to somewhat excessive. | Moderate to low. | 40-60" (100-150) | Colluvium | I, II & III |
| 77 | Klamath Mountains/ Applegate Group metamorphic rocks, non-glaciated. | Smooth, flat to gently sloping surfaces developing from slope wash & old terrace deposits. | 0-5% | 10-35% | 7700 | l, cl, c, gl, fcl & gc | 15-20" (40-50) | 40-60" (100-150) | Highly weathered metamorphic rocks of the Applegate Group or old terrace deposits. | Well to moderately well. | Moderate to high. | 24-48" (60-120) | Residuum & alluvium. | I & II |

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TABLE OF LANDTYPE CHARACTERISTICS

| | PHYSIOGRAPHIC CHARACTERISTICS | | | | SOIL CHARACTERISTICS | | | | | | | | | VEGETATIVE AND CLIMATOLOGICAL CHARACTERISTICS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LANDTYPE NUMBER | PHYSIOGRAPHIC PROVINCE/ SUB-PROVINCE | LANDFORM AND POSITION DESCRIPTION | ROCK OUTCROP PERCENT | SLOPE RANGE PERCENT | SOIL PROFILE TYPE | SOIL TEXTURAL RANGE | THICKNESS OF SURFACE LAYERS (in.) (cm.) | DEPTH TO SUB-STRATUM (in.) (cm.) | NATURE OF SUB-STRATUM | DRAINAGE CLASS | INTRINSIC PRODUCTIVE POTENTIAL | ROOTING DEPTH (in.) (cm.) | ORIGIN OF SOIL MATERIAL | ENVIRONMENTAL ZONE |
| 80 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Smooth to slightly dissected, steep to very steep, concave upper headwater areas. | 10-15% | 45-80+% | 8000 | sl & gsl | 5-10" (10-25) | 20-40" (50-100) | Hard to moderately hard quartz diorites & diorites. | Well to moderately well. | Low to moderate. | 20-40" (50-100) | Colluvium & residuum. | I, II & III |
| 81 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Colluvial deposits at toe slopes of steep hillsides along drainage ways. | 0-5% | 20-40% | 8100 | ksl & vksl | 5-10" (10-25) | 40-60" (100-150) | Very deep colluvial deposits associated with diorite and quartz diorite material. | Well | Moderate | 40-60+" (100-150) | Colluvium | II & III |
| 82 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Slight to moderately dissected, steep to very steep, straight slopes. | 10-15% | 60-80+% | 8200 | gsl, vgsl, & gl | 5-10" (10-25) | 30-50" (75-125) | Decomposed diorites, quartz diorites and gabbros. | Well to excessively. | Low to moderate. | 20-40" (50-100) | Colluvium & residuum. | I, II & III |
| 83 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Smooth, gently sloping & rounded ridges & hilltops. | 10-15% | 10-35% | 8200 | sl, gsl, & gl | 5-10" (10-25) | 20-40" (50-100) | Decomposed diorites, quartz diorites and gabbros. | Excessively | Low | 20-40" (50-100) | Residuum & colluvium. | I, II & III |
| 84 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Flat to gently sloping mid and lower slope benches. | 0-5% | 10-35% | 8200 | sl, gsl, & gl | 5-10" (10-25) | 30-50" (75-125) | Decomposed diorites, quartz diorites and gabbros. | Well | Low to moderate. | 20-40" (50-100) | Residuum & colluvium. | II & III |
| 85 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Slightly to moderately dissected, steep, short choppy slopes. Overall broken topography. | 5-10% | 35-70% | 8500 | gsl & gscl | 5-10" (10-25) | 30-60" (75-150) | Highly weathered diorites & gabbros. | Well | Moderate to low. | 20-40" (50-100) | Colluvium & residuum. | I |
| 86 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Smooth, gently sloping, rounded surfaces, toe slopes, & slope wash deposits. | 0-5% | 15-35% | 8600 | l, sl, scl, gl, gsl & gscl | 5-15" (10-40) | 50-60" (125-150) | Highly weathered diorites & gabbros. | Well | Moderate | 20-50" (50-125) | Residuum | I |
| 87 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Highly dissected, steep, short, choppy slopes, overall broken topography. | 5-10% | 35-70% | 8500 | gsl & gscl | 5-10" (10-25) | 30-60" (75-150) | Highly weathered diorites & gabbros. | Well | Moderate to low. | 20-40" (50-100) | Colluvium & residuum. | I |
| 88 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Colluvial deposits associated with steep to very steep mid-slope positions below rock outcrops & sharp ridges. | 10-15% | 50-80+% | 8100 | vgsl & eksl | 5-10" (10-25) | 40-60" (100-150) | Deep colluvial deposits with diorite & quartz diorite materials. | Well to excessively. | Low | 30-50" (75-125) | Colluvium | I, II & III |
| 89 | Klamath Mountains/ Felsic intrusive igneous bodies, non-glaciated. | Highly dissected, steep to very steep, straight side slopes. | 20-25% | 50-80+% | 8900 | gsl & vgsl | 5-10" (10-25) | 20-40" (50-100) | Moderately hard to hard quartz diorite materials. | Well | Low | 20-40" (50-100) | Colluvium & residuum. | I, II & III |
| 90 | Klamath Mountains/ Undifferentiated. | Recent alluvial deposits by major streams. | 0-5% | 0-20% | Variable | Highly variable. | Highly variable. | Highly variable. | Deep to very deep recent alluvial deposits generally high in gravel, cobble and stone. | Highly variable. | Highly variable. | Highly variable. | Alluvium | I & II |
| 91 | Klamath Mountains/ Undifferentiated. | South aspect slopes at low elevations. Very low timber site potential. | 30-40% | Variable | Not rated. | Not rated. | Not rated. | Generally less than 40". | Generally hard rock. | Well | Low | Variable | Residuum & colluvium. | I & II |
| 92 | Klamath Mountains/ Undifferentiated. | Perennially wet Alder glades on side slopes & in basins. | Not rated. | Variable | Not rated. | Not rated. | Not rated. | Variable | Variable | Poorly | Not rated. | Variable | Residuum & colluvium. | I, II & III |
| 93 | Klamath Mountains/ Undifferentiated. | Large rock outcrops & associated talus fields. | 100% | Variable | Not rated. | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | I, II & III |
| 94 | Klamath Mountains/ Undifferentiated. | Perennially wet meadows & marshy land. | Not rated. | Variable | Not rated. | Variable | Variable | Variable | Variable | Poorly | Not rated. | Variable | N/A | I, II & III |
| 95 | Klamath Mountains/ Undifferentiated. | Seasonally dry meadows & scabland. | Not rated. | Variable | Not rated. | Variable | Variable | Variable | Variable | Well | Not rated. | Variable | N/A | I, II & III |
| 99 | Klamath Mountains/ Undifferentiated. | Old landflows & landslide deposits consisting of interconnected steep slopes & benches. | Variable | Variable | Not rated. | Variable | Variable | Variable | Variable | Variable | Variable | Variable | Mainly landslide deposits & debris. | I, II & III |



SOIL RESOURCE INVENTORY ROGUE RIVER NATIONAL FOREST

TABLE OF BEDROCK CHARACTERISTICS

| INCLUDED LANDTYPES | COMPOSITION | COLOR | HARDNESS | DEGREE OF FRACTURING | COMPETENCY | REMARKS |
|---|---|---|---|---|---|---|
| 52, 53, 54, 55, 90, 91, 92, 93, 94, 95 & 99 | Undifferentiated Klamath Mountains Province geologic materials. | ----- | ----- | ----- | ----- | ----- |
| 57 | Serpentine & Peridotite. | Pale green to black. | Moderately hard to hard. | Moderate | Moderately competent | ----- |
| 58 & 59 | Highly altered fault zone metamorphic rocks, mafic rocks, & locally ultramafic rocks. | Buff & light gray to black. | Soft to moderately hard. | Moderate to high. | Incompetent to moderately competent. | These landtypes are based as much upon apparent rock condition as on rock type. |
| 60, 61, 62, 63, 68 & 69 | Old (paleazoic) schists consisting mainly of mica & graphite schists with inclusion of green, chlorite & talc schists. Rocks are generally highly foliated. | Mica & graphite schists are gray to black. ---------- Green, chlorite & talc schists are very light green to green. | Moderately hard. | High (also highly foliated) | Moderately competent. | ----- |
| 70, 71, 72, 73 & 75 | Applegate Group triassic metamorphic rocks consisting dominantly of fine-grained meta-sedimentary & meta-volcanic rock types. | Dark gray & brown to pale green & buff. | Hard to moderately hard. | High | Competent to moderately competent. | Soft, incompetent bedrock materials may occur along contacts & old fault zones. |
| 74 & 77 | Applegate Group triassic metamorphic rocks consisting dominantly of fine-grained meta-sedimentary & meta-volcanic rock types. | Dark gray & brown to pale green & buff. | Moderately hard to soft. | High | Competent to moderately competent. | Hard rock outcrops may occur locally & near ridgetops. |
| 81, 82, 83, 84, 85, 86 & 87 | Felsic intrusive or granitoid rocks consisting of quartz diorites, diorites, & locally gabbros. Rocks are generally coarse grained. | Light gray to buff. "Salt & pepper" appearance. | Soft to moderately hard (decomposed) (dg) | Massive to slight. | Incompetent to moderately competent. | Hard rock outcrops may occur locally. |
| 80, 88 & 89 | Felsic intrusive or granitoid rocks consisting of quartz diorites, diorites, & locally gabbros. Rocks are generally coarse-grained. | Light gray to buff. "Salt & pepper" appearance. | Hard to moderately hard. | Massive to slight. | Competent | Inclusions of weathered bedrock material may occur locally. Landtype 80 contains the least competent bedrock materials of this group. |

TABLE OF MODAL SITE SOIL CHARACTERISTICS

| SOIL NUMBER | LOCATION OF MODAL SITE | SOIL LAYER | SOIL LAYER THICKNESS (in.)(cm.) | MOIST COLOR | TEXTURE | ROCK FRAGMENT PERCENT & SIZE (in.) & (cm.) | ROCK FRAGMENT SHAPE | STRUCTURE GRADE | STRUCTURE SIZE | STRUCTURE TYPE | COMPACTION OR CEMENTATION | PERMEABILITY | DRY CONSISTANCE | MOIST CONSISTANCE | WET CONSISTANCE | PH | ESTIMATED TAXONOMIC CLASSIFICATION 1/ ( ZONE I ) | ( ZONE II ) | ( ZONE III ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5200 | SW¼ of NE¼, Sec. 11, T. 41 S., R. 2 W. | 1 | 0-11" (0-25) | Very dark grayish brown. | Very cobbley sandy loam. | 25% - .1-3" (2 mm. - 7 cm.) 25% - 3-10" (7-25 cm.) | Round | Moderate | Fine | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.6 | ----- | Loamy-skeletal mixed frigid family of Entic Xerumbrepts. | Loamy-skeletal mixed family of Entic Cryumbrepts. |
| | | 2 | 11-32" (25-80) | Olive brown. | Very cobbley sandy loam. | Same as above. | Round | ---- | ---- | Massive | ---- | Rapid | Slightly hard. | Firm | Non-sticky & non-plastic. | 5.8 | | | |
| | | 3 | 32-60+" (80-150) | MODERATELY COMPACTED GLACIAL TILL | | | | | | | | | | | | | | | |
| 5700 | NE¼ of NE¼, Sec. 33, T. 40 S., R. 2 W. | 1 | 0-8" (0-20) | Very dark grayish brown. | Very cobbley silt loam. | 35% - .1-3" (2mm. - 7 cm.) 35% - 3-10" (7-25 cm.) | Angular | Strong | Fine | Granular | ---- | Moderate | Slightly hard. | Friable | Slightly sticky/plastic. | 6.8 | Clayey-skeletal serpentinitic mesic family of Mollic Haploxeralfs. | Clayey-skeletal serpentinitic frigid family of Mollic Haploxeralfs. | Clayey-skeletal serpentinitic family of Mollic Cryoboralfs. |
| | | 2 | 8-12" (20-30) | Dark grayish brown. | Very gravelly clay loam. | Same as above. | Angular | Strong | Medium | Subangular blocky. | ---- | Moderate | Hard | Firm | Very sticky & very plastic. | 6.6 | | | |
| | | 3 | 12-22" (30-55) | Olive brown. | Extremely cobbley clay. | 35% - .1-3" (2mm. - 7 cm.) 50% - 3-10" (7-25 cm.) | Angular | ---- | ---- | Massive | ---- | Slow | Hard | Firm | Very sticky & very plastic. | 6.6 | | | |
| | | 4 | 22-40+" (55-100) | FRACTURED, MODERATELY HARD SERPENTINE | | | | | | | | | | | | | | | |
| 5800 | NW¼ of SW¼, Sec. 21, T. 48 N., R. 9 W. (California) | 1 | 0-15" (0-40) | Dark brown. | Loam | 20% - .1-3" (2 mm. - 7 cm.) | Angular | Strong | Very fine. | Subangular blocky. | ---- | Rapid | Slightly hard. | Friable | Slightly sticky/plastic. | 6.6 | ----- | Clayey-skeletal mixed frigid family of Ultic Haploxeralfs. | Clayey-skeletal mixed family of Typic Cryoboralfs. |
| | | 2 | 15-40" (40-100) | Yellowish red. | Gravelly clay loam. | 40% - .1-3" (2 mm. - 7 cm.) | Angular | Strong | Medium | Subangular blocky. | ---- | Moderate | Slightly hard. | Firm | Sticky & plastic. | 5.4 | | | |
| | | 3 | 40-55" (100-140) | Yellowish brown. | Very cobbley clay loam. | 30% - .1-3" (2 mm. - 7 cm.) 30% - 3-10" (7-25 cm.) | Angular | ---- | ---- | Massive | ---- | Moderate | Slightly hard. | Friable | Slightly sticky/plastic. | 5.8 | | | |
| | | 4 | 55-60+" (140-150) | HIGHLY FRACTURED PERIDOTITE | | | | | | | | | | | | | | | |
| 5900 | NW¼ of NE¼, Sec. 5, T. 41 S., R. 5 W. | 1 | 0-18" (0-45) | Dark brown. | Gravelly loam. | 25% - .1-3" (2 mm. - 7 cm.) 15% - 3-10" (7-25 cm.) | Angular | Moderate | Very fine. | Subangular blocky. | ---- | Rapid | Soft | Friable | Non-plastic & slightly sticky. | 5.8 | ----- | Loamy-skeletal mixed frigid family of Ultic Haploxeralfs. | Loamy-skeletal mixed family of Typic Cryoborolfs. |
| | | 2 | 18-50" (45-125) | Brown | Very cobbley clay loam. | 25% - .1-3" (2 mm. - 7 cm.) 30% - 3-10" (7-25 cm.) | Angular | Moderate | Medium | Subangular blocky. | ---- | Moderate | Slightly hard. | Firm | Sticky & plastic. | 6.2 | | | |
| | | 3 | 50-100+" (125-255) | Dark yellowish brown. | Very cobbley clay loam. | Same as above. | Angular | ---- | ---- | Massive | ---- | Moderate | Slightly hard. | Firm | Sticky & plastic. | 6.2 | | | |
| 6000 | SW¼ of NE¼, Sec. 28, T. 48 N., R. 10 W. (California) | 1 | 0-10" (0-25) | Very dark grayish brown. | Very gravelly loam. | 50% - .1-3" (2 mm. - 7 cm.) | Platy | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal micaceous mesic family of Ultic Haploxerolls. | Loamy-skeletal micaceous frigid family of Typic Xerumbrepts. | Loamy-skeletal micaceous family of Typic Cryumbrepts. |
| | | 2 | 10-25" (25-65) | Grayish brown. | Very gravelly loam. | Same as above. 15% - 3-10" (7-25 cm.) | Platy | Weak | Very fine. | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.6 | | | |
| | | 3 | 25-38" (65-95) | Grayish brown. | Extremely gravelly loam. | 50% - .1-3" (2 mm. - 7 cm.) 40% - 3-10" (7-25 cm.) | Platy | ---- | ---- | Single grain. | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 5.6 | | | |
| | | 4 | 38-40+" (95-100) | HIGHLY FRACTURED GRAPHITE SCHIST | | | | | | | | | | | | | | | |
| 6900 | NW¼ of NW¼, Sec. 25, T. 48 N., R. 10 W. (California) | 1 | 0-14" (0-35) | Very dark grayish brown. | Very gravelly loam. | 40% - .1-3" (2 mm. - 7 cm.) 20% - 3-10" (7-25 cm.) | Platy | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Loamy-skeletal micaceous mesic family of Ultic Haploxerolls. | Loamy-skeletal micaceous frigid family of Typic Xerumbrepts. | Loamy-skeletal micaceous family of Typic Cryumbrepts. |
| | | 2 | 14-42" (35-105) | Dark grayish brown. | Very gravelly loam. | Same as above. | Platy | Weak | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | | | |
| | | 3 | 42-60+" (105-150) | Olive gray. | Very gravelly fine sandy loam. | Same as above. | Platy | ---- | ---- | Single grain. | ---- | Rapid | Loose | Loose | Non-sticky & non-plastic. | 5.4 | | | |
| 7000 | NE¼ of NW¼, Sec. 7, T. 41 S., R. 4 W. | 1 | 0-8" (0-20) | Very dark grayish brown. | Gravelly loam. | 30% - .1-3" (2 mm. - 7 cm.) 15% - 3-10" (7-25 cm.) | Platy | Moderate | Very fine. | Granular | ---- | Rapid | Soft | Very friable | Non-plastic & slightly sticky. | 6.2 | Loamy-skeletal mixed mesic family of Typic Xerochrepts. | Loamy-skeletal mixed frigid family of Dystric Xerochrepts. | Loamy-skeletal mixed family of Dystric Cryochrepts. |
| | | 2 | 8-18" (20-45) | Dark grayish brown. | Gravelly loam. | Same as above. | Platy | Weak | Medium | Subangular blocky. | ---- | Rapid | Soft | Very friable. | Non-plastic & slightly sticky. | 6.0 | | | |
| | | 3 | 18-34" (45-85) | Dark grayish brown. | Gravelly loam. | Same as above. 30% - 3-10" (7-25 cm.) | Platy | ---- | ---- | Massive | ---- | Moderate | Soft | Very friable. | Non-plastic & slightly sticky. | 5.8 | | | |
| | | 4 | 34-40+" (85-100) | HIGHLY FRACTURED, HARD METASEDIMENTARY ROCK | | | | | | | | | | | | | | | |
| 7400 | SE¼ of SE¼, Sec. 18, T. 40 S., R. 4 W. | 1 | 0-13" (0-35) | Very dark grayish brown. | Gravelly loam. | 20% - .1-3" (2 mm. - 7 cm.) 15% - 3-10" (7-25 cm.) | Platy | Moderate | Fine | Subangular blocky. | ---- | Moderate | Soft | Friable | Non-sticky & non-plastic. | 6.2 | Loamy-skeletal mixed mesic family of Typic Haploxeralfs. | Loamy-skeletal mixed mesic family of Ultic Haploxeralfs. | ----- |
| | | 2 | 13-41" (35-105) | Dark brown. | Gravelly clay loam. | 25% - .1-3" (2 mm. - 7 cm.) 20% - 3-10" (7-25 cm.) | Platy | Moderate | Medium | Subangular blocky. | ---- | Moderate | Slightly hard. | Firm | Slightly sticky/plastic. | 6.2 | | | |
| | | 3 | 41-50+" (105-125) | HIGHLY FRACTURED, MODERATELY HARD METASEDIMENTARY ROCK | | | | | | | | | | | | | | | |
| 7500 | NE¼ of NW¼, Sec. 19, T. 40 S., R. 1 W. | 1 | 0-9" (0-20) | Very dark grayish brown. | Very cobbley loam. | 20% - .1-3" (2 mm. - 7 cm.) 50% - 3-10" (7-25 cm.) | Platy | Moderate | Very fine. | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.8 | Loamy-skeletal mixed mesic family of Entic, Ultic, Haploxerolls. | Loamy-skeletal mixed frigid family of Entic Xerumbrepts. | Loamy-skeletal mixed family of Entic Cryumbrepts. |
| | | 2 | 9-20" (20-50) | Dark brown. | Very cobbley loam. | Same as above. | Platy | Weak | Fine | Granular | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.4 | | | |



TABLE OF MODAL SITE SOIL CHARACTERISTICS

| SOIL NUMBER | LOCATION OF MODAL SITE | SOIL LAYER | SOIL LAYER THICKNESS (in.)(cm.) | MOIST COLOR | TEXTURE | ROCK FRAGMENT PERCENT & SIZE (in.) & (cm.) | ROCK FRAGMENT SHAPE | STRUCTURE GRADE | STRUCTURE SIZE | STRUCTURE TYPE | COMPACTION OR CEMENTATION | PERMEABILITY | DRY CONSISTANCE | MOIST CONSISTANCE | WET CONSISTANCE | PH | ESTIMATED TAXONOMIC CLASSIFICATION 1/ ( ZONE I ) | ( ZONE II ) | ( ZONE III ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7500 (Continued) | | 3 | 20-80+" (50-205) | Dark yellowish brown. | Extremely cobbley loam (fragmented) | 20% - .1-3" (2 mm. - 7 cm.) 60% - 3-10" (7-25 cm.) | Platy | ---- | ---- | Massive | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | | | |
| 7700 | SW¼ of NE¼, Sec. 7, T. 40 S., R. 3 W. | 1 | 0-18" (0-45) | Brown | Loam | 10% - .1-3" (2 mm. - 7 cm.) | Rounded | Strong | Fine | Subangular blocky. | --- | Rapid | Slightly hard. | Firm | Slightly sticky/plastic. | 6.2 | Fine-loamy mixed mesic family of Typic Haploxeralfs. | Fine-loamy mixed frigid family of Ultic Haploxeralfs. | ----- |
| | | 2 | 18-41" (45-105) | Strong brown. | Clay loam. | Same as above. | Rounded | Strong | Medium | Subangular blocky. | ---- | Moderate | Hard | Very firm. | Sticky & plastic. | 6.0 | | | |
| | | 3 | 41-45+" (105-115) | SOFT, HIGHLY WEATHERED SAPROLYTIC METAMORPHIC ROCK EXHIBITING CLAY FILMS IN FRACTURES. | | | | | | | | | | | | | | | |
| 8000 | NE¼ of NW¼, Sec. 22, T. 40 S., R. 1 E. | 1 | 0-8" (0-20) | Very dark brown. | Sandy loam. | 20% - .1-1" (2 mm. - 3 cm.) | Angular | Moderate | Very fine. | Granular | ---- | Moderate to rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.0 | Coarse-loamy mixed mesic family of Typic Xerochrepts. | Coarse-loamy mixed frigid family of Entic Xerumbrepts. | Coarse-loamy mixed family of Entic Cryumbrepts. |
| | | 2 | 8-29" (20-75) | Dark yellowish brown. | Gravelly sandy loam. | 30% - .1-1" (2 mm. - 3 cm.) | Angular | ---- | ---- | Massive | ---- | Moderate to rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 5.2 | | | |
| | | 3 | 29-36+" (75-90) | HARD QUARTZ DIORITE | | | | | | | | | | | | | | | |
| 8100 | SW¼ of NE¼, Sec. 5, T. 40 S., R. 1 E. | 1 | 0-6" (0-15) | Very dark grayish brown. | Very cobbley sandy loam. | 20% - .1-3" (2 mm. - 7 cm.) 35% - 3-10" (7-25 cm.) | Subangular | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.4 | ----- | Loamy-skeletal mixed frigid family of Entic Xerumbrepts. | Loamy-skeletal mixed family of Entic Cryumbrepts. |
| | | 2 | 6-14" (15-35) | Dark brown. | Very cobbley sandy loam. | Same as above. | Subangular | Weak | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 14-60+" (35-150) | Dark yellowish brown. | Very cobbley sandy loam. | Same as above. | Subangular | ---- | ---- | Single grain. | ---- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | | | |
| 8200 | SW¼ of SE¼, Sec. 16, T. 40 S., R. 5 W. | 1 | 0-6" (0-15) | Dark brown. | Very gravelly sandy loam. | 35% - .1-.5" (2 mm. - 1 cm.) | Angular | Moderate | Fine | Granular | ---- | Rapid | Soft | Very friable. | Non-sticky & non-plastic. | 5.8 | Coarse-loamy mixed mesic family of Typic Xerochrepts. | Coarse-loamy mixed frigid family of Dystric Xerochrepts. | Coarse-loamy mixed family of Dystric Cryochrepts. |
| | | 2 | 6-30" (15-75) | Dark yellowish brown. | Gravelly sandy loam. | 30% - .1-.5" (2 mm. - 1 cm.) | Angular | ---- | ---- | Massive | ---- | Moderate | Slightly hard. | Friable | Non-sticky & non-plastic. | 5.4 | | | |
| | | 3 | 30-60+" (75-150) | VERY HIGHLY DECOMPOSED DIORITE. | | | | | | | | | | | | | | | |
| 8500 | NW¼ of NE¼, Sec. 24, T. 40 S., R. 3 W. | 1 | 0-10" (0-25) | Very dark brown. | Very gravelly sandy loam. | 30% - .1-.25" (2 mm. - .5 cm.) | Angular | Moderate | Fine to medium. | Granular | --- | Very rapid. | Soft | Very friable. | Non-sticky & non-plastic. | 6.6 | Loamy-mixed mesic family of Pachic Haploxerolls. | ----- | ---- |
| | | 2 | 10-50" (25-125) | Brown | Very gravelly sandy loam. | Same as above. | Angular | ---- | ---- | Massive | ---- | Rapid | Slightly hard. | Firm | Non-plastic & slightly sticky. | 6.2 | | | |
| | | 3 | 50-60+" (125-150) | VERY HIGHLY DECOMPOSED DIORITE. | | | | | | | | | | | | | | | |
| 8600 | NE¼ of NW¼, Sec. 16, T. 40 S., R. 2 W. | 1 | 0-13" (0-35) | Dark grayish brown. | Loam | 20% - .1-.25" (2 mm. - .5 cm.) | Angular | Moderate | Medium | Subangular blocky. | ---- | Rapid | Soft | Friable | Non-sticky & non-plastic. | 6.4 | Fine-loamy mixed mesic family of Ultic Haploxerolls. | ----- | ---- |
| | | 2 | 13-40" (35-100) | Dark reddish brown. | Clay loam. | Same as above. | Angular | Strong | Coarse | Subangular blocky. | ---- | Moderate | Very hard. | Very firm. | Very sticky & plastic. | 6.2 | | | |
| | | 3 | 40-50" (100-125) | Dark brown. | Loam | Same as above. | Angular | ---- | ---- | Massive | ---- | Moderate | Very hard. | Firm | Sticky & plastic. | 6.2 | | | |
| | | 4 | 50-60+" (125-150) | VERY HIGHLY DECOMPOSED DIORITE. | | | | | | | | | | | | | | | |
| 8900 | NE¼ of SE¼, Sec. 20, T. 39 S., R. 1 E. | 1 | 0-7" (0-15) | Very dark gray. | Gravelly sandy loam. | 35% - .1-.25" (2 mm. - .5 cm.) | Angular | Moderate | Fine | Granular | --- | Rapid | Soft | Friable | Non-sticky & non-plastic. | 6.6 | Coarse-loamy mixed mesic family of Typic Xerumbrepts. | Coarse-loamy mixed frigid family of Entic Xerumbrepts. | Coarse-loamy mixed family of Entic Cryumbrepts. |
| | | 2 | 7-30" (15-75) | Dark grayish brown. | Gravelly sandy loam. | Same as above. | Angular | ---- | ---- | Massive | ---- | Rapid | Soft | Friable | Non-sticky & non-plastic. | 6.2 | | | |
| | | 3 | 30-40+" (75-100) | MODERATELY HARD QUARTZ DIORITE, COARSE CRYSTALINE | | | | | | | | | | | | | | | |

FOOTNOTES:

(1) The elevations in the Siskiyou Mountains portion of the forest range from about 2,000 feet (600 meters) to about 7,000 feet (2,100 meters). Accompanying an increase in elevation are: a) an increase in precipitation and b) a decrease in overall temperature. Soil taxonomic differences are a reflection of these variables even though the soil profile itself may appear outwardly to remain relatively constant.

# LANDTYPE MAPS

# FOR THE

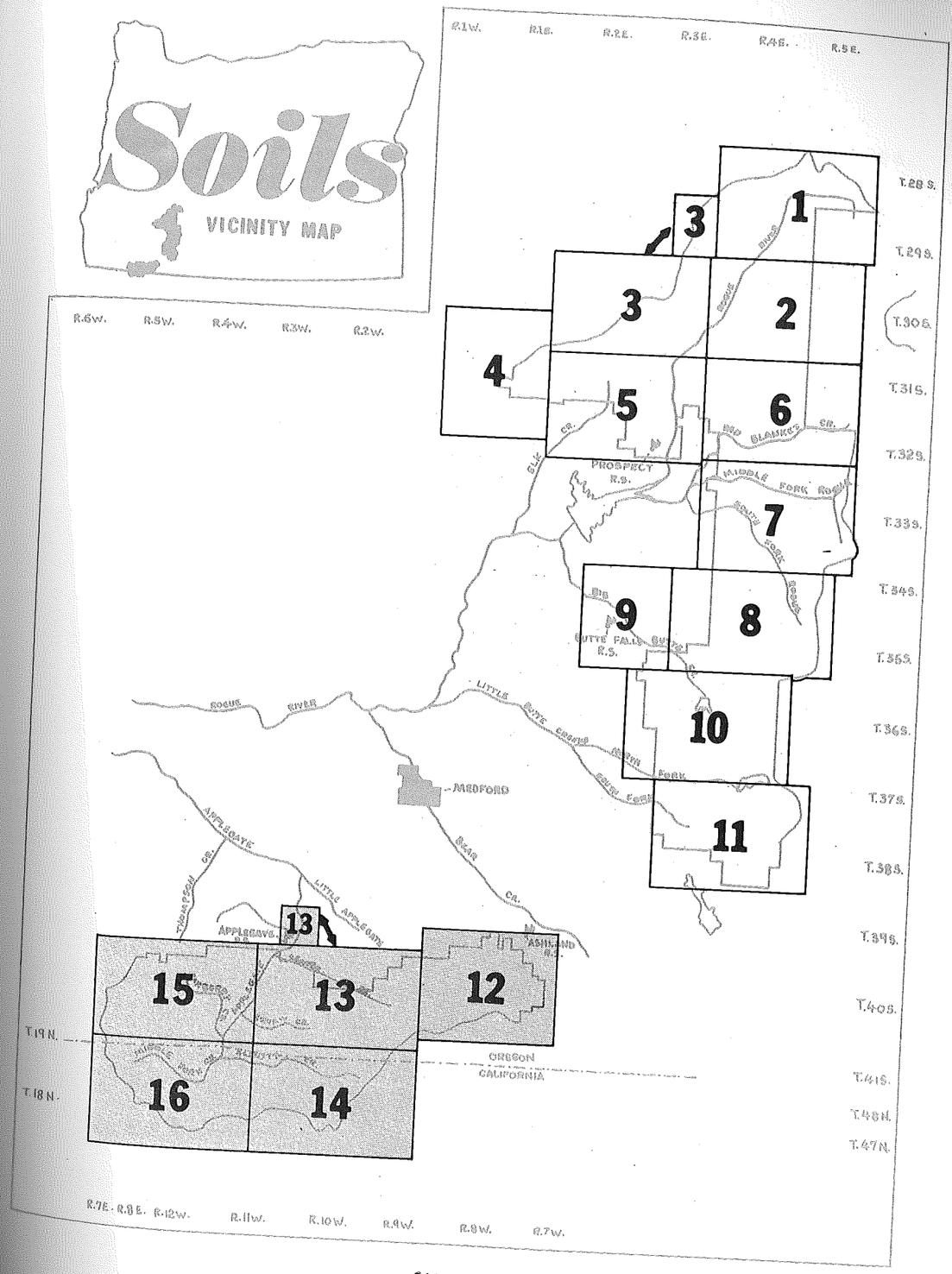
# SISKIYOU MOUNTAINS

# PORTION OF THE

# ROGUE RIVER NATIONAL FOREST

# Soils

VICINITY MAP



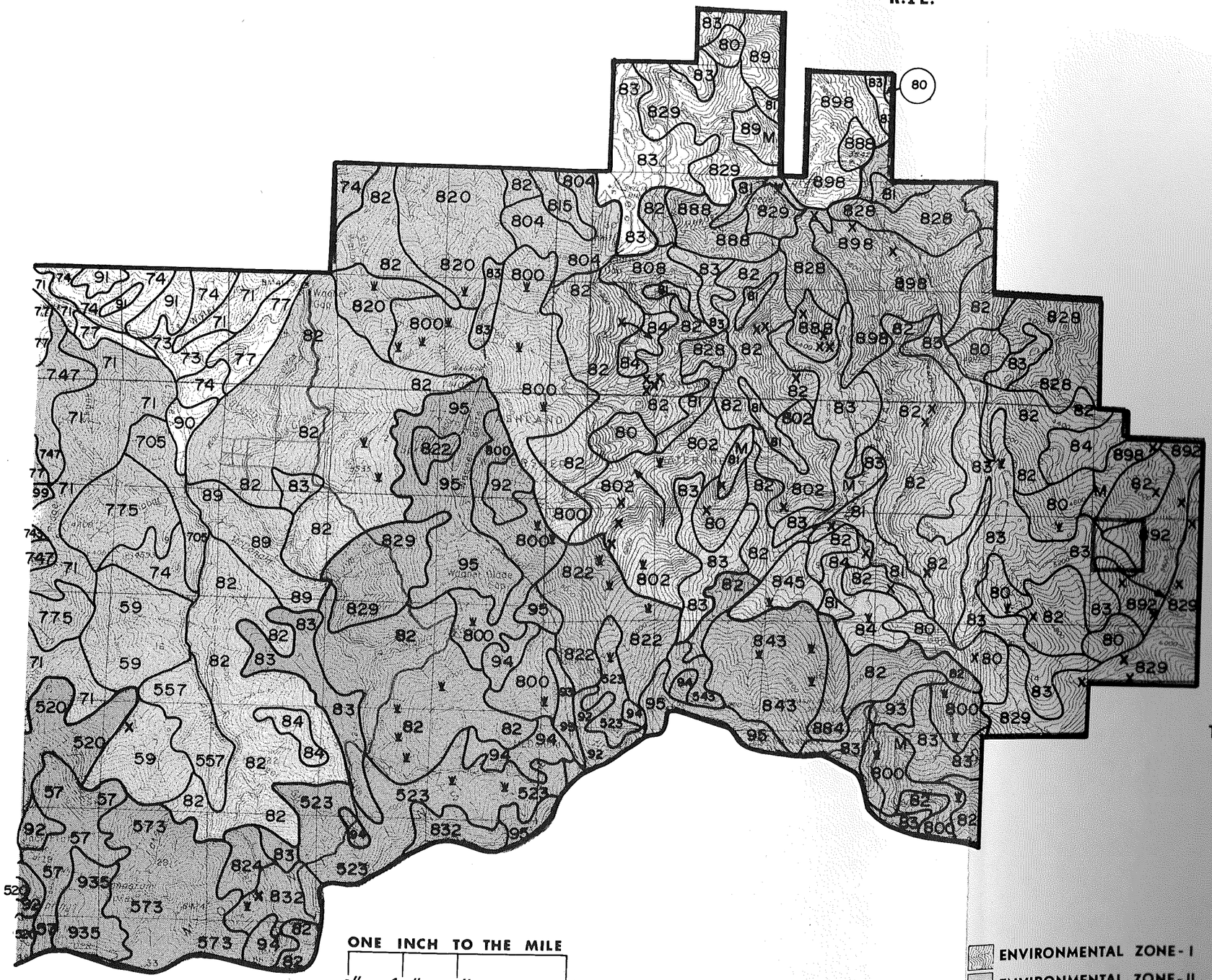
# ROGUE RIVER NATIONAL FOREST S R I

R.1W.

R.1 E.

12

T.39S.



T.40 S.

ONE INCH TO THE MILE

0″ ½″ 1″ 2″

SCALE

ENVIRONMENTAL ZONE-I

ENVIRONMENTAL ZONE-II

ENVIRONMENTAL ZONE-III

# ROGUE RIVER NATIONAL FOREST S R I



R.3 W.

R.2 W.

ENVIRONMENTAL ZONE - I
ENVIRONMENTAL ZONE - II
ENVIRONMENTAL ZONE - III

ONE INCH TO THE MILE
0" 1/2" 1" 2"
SCALE

T40S.

# ROGUE RIVER NATIONAL FOREST S R I

R.11 W.

R.10 W.

R.9 W.

14



T.41 S.

T. 48 N.

ONE INCH TO THE MILE

0″ ½″ 1″ 2″

SCALE

ENVIRONMENTAL ZONE - I

ENVIRONMENTAL ZONE - II

ENVIRONMENTAL ZONE - III

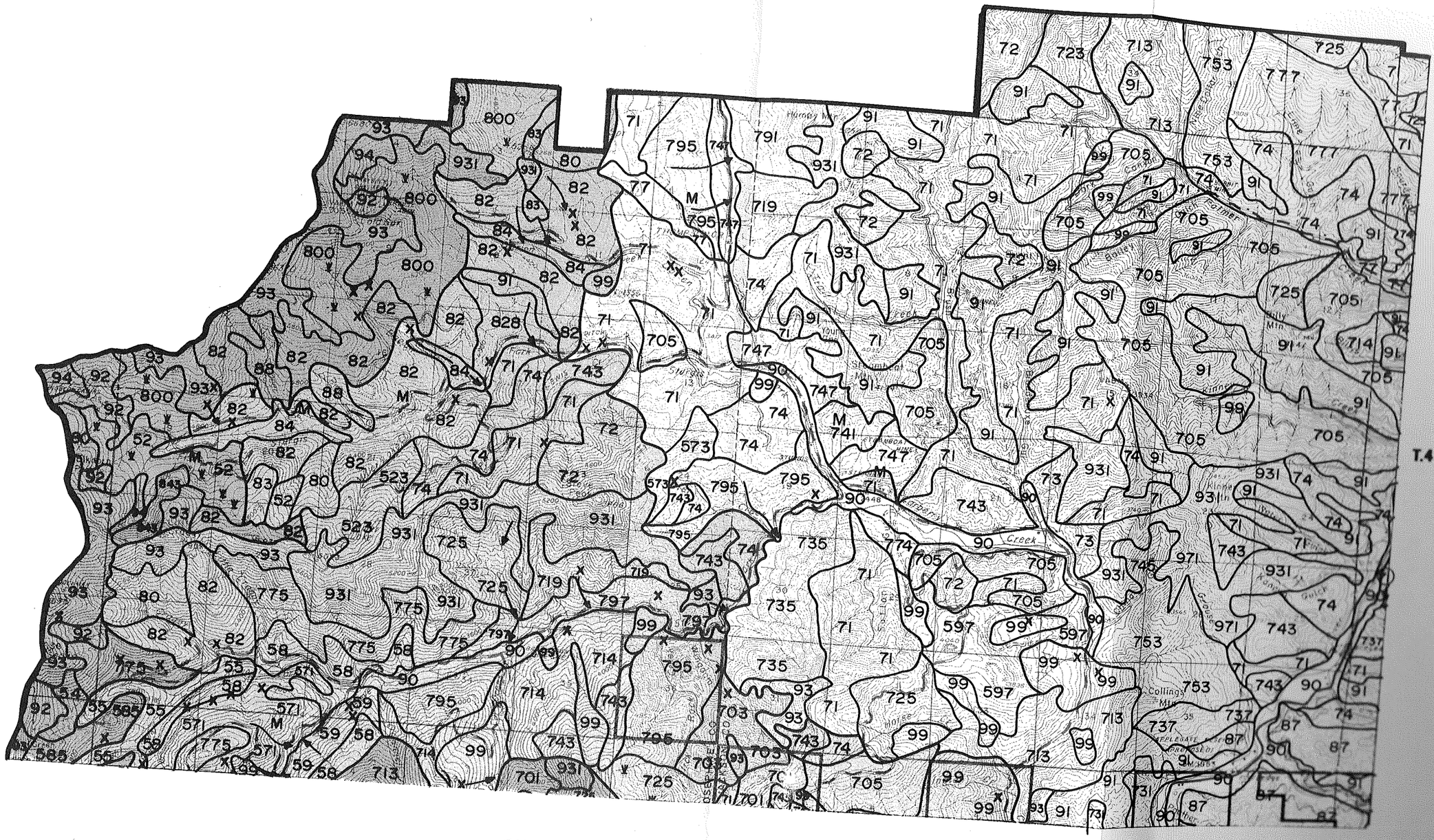
# ROGUE RIVER NATIONAL FOREST S R I

R.5 W.

R.4 W.



T.40S.



ONE INCH TO THE MILE

0″ ½″ 1″ 2″

SCALE

ENVIRONMENTAL ZONE - I

ENVIRONMENTAL ZONE - II

ENVIRONMENTAL ZONE - III

# ROGUE RIVER NATIONAL FOREST S R I

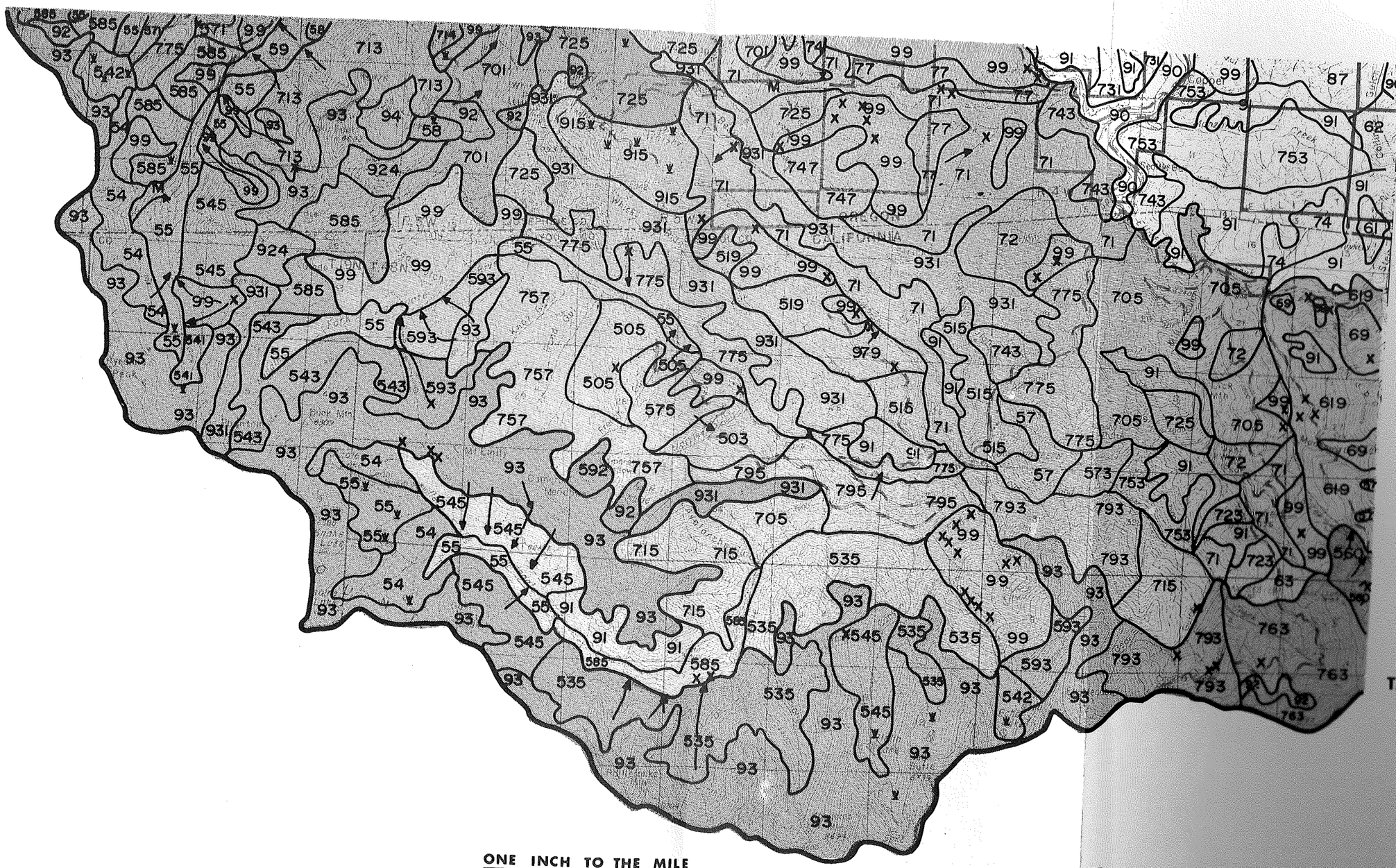
R.7 E. R.8 E. R 12 W. R.11 W.

16

T.41 S.

T.19 N.

T.18 N.



ONE INCH TO THE MILE

0″ 1/2″ 1″ 2″

SCALE

ENVIRONMENTAL ZONE - I

ENVIRONMENTAL ZONE - II

ENVIRONMENTAL ZONE - III

# APPENDIX

## MAPPING UNIT DEFINITIONS

Mapping units in this report are divided into three categories. These are: (1) Miscellaneous Units, (2) Landtype Units, and (3) Complexes.

### Miscellaneous Units

Miscellaneous Units are indicated by the numbers 1-9 in the Cascades and 90-99 in the Siskiyous. These units are comprised of land areas which are extremely complex or which vary from a soils aspect to such a degree that an acceptable range of defining criteria cannot be established. Interpretations on these units vary dependent upon the complexity contained within the units. In general, management interpretations are not made on Miscellaneous Units unless the central concept is in itself limiting. For example, a rock outcrop or wet meadow would each have severe limitations to certain uses or management activities without further definition.

### Landtype Units

Landtype Units are represented by two digit numbers and have a definable range of characteristics that include considerations of (1) soil profile characteristics, (2) topographic and geologic characteristics, and (3) environmental characteristics. Interpretations are developed on each Landtype Unit and are based upon any combination of the above factors which pertain to a given management operation. Occasionally, in the Cascades, the letters "A" or "H" are used in conjuction with the two-digit numerical unit designation. The letter "A" is used to indicate surface layers of volcanic ash when it occurs on one of two units that would in all other respects be the same. The letter "H" is used in much the same way. The "H" indicates an Upper Forest environment when used in conjunction with a numeric symbol that also occurs in the Principal Forest Environmental Zone. For example: units 11 and 11-H are nearly identical in all respects except that 11 occurs in association with Douglas-fir and white fir dominated plant communities while 11-H occurs in associaton with Shasta red fir dominated plant communities at higher elevations. All Landtype Units contain up to 30 percent inclusions of other units.

### Complexes

Complexes are represented by three digit numbers and are used in areas where two or more Landtype Units are present in an arrangement too intricate to separate at this mapping scale. The list of complexes indicates the Landtype Units comprising each complex and the appropriate percentage of each landtype component. Where one member of the complex may limit activity over the entire complex, a special notation is made in the legend.

# ABBREVIATIONS, SYMBOLS AND NOMENCLATURE USED IN THIS REPORT

# LIST OF SOIL ABBREVIATIONS USED IN TABLES AND TEXT

## SOIL TEXTURE ABBREVIATIONS

| | | |
|---|---|---|
| s | - | sand |
| si | - | silt |
| c | - | clay |
| l | - | loam |
| ls | - | loamy sand |
| lcos | - | loamy coarse sand |
| lfs | - | loamy fine sand |
| sl | - | sandy loam |
| fsl | - | fine sandy loam |
| vfsl | - | very fine sandy loam |
| scl | - | sandy clay loam |
| sil | - | silt loam |
| sicl | - | silty clay loam |
| cl | - | clay loam |
| sic | - | silty clay |

## COARSE FRAGMENT MODIFIER ABBREVIATIONS

(size and volume of rock fragments occupying a given volume of soil)

| | | |
|---|---|---|
| v | - | very (denotes quantity) |
| e | - | extremely (denotes quantity) |
| g | - | gravelly (denotes rock fragment size and quantity) |
| k | - | cobbly (denotes rock fragment size and quantity) |
| st | - | stoney (denotes rock fragment size and quantity) |

## COMBINATIONS OF SOIL AND MODIFIER ABBREVIATIONS (examples)

| | | |
|---|---|---|
| vkl | - | very cobbly loam |
| vgsl | - | very gravelly sandy loam |
| estlcos | - | extremely stoney loamy coarse sand |
| kcl | - | cobbly clay loam |
| gl | - | gravelly loam |
| etc. | | |

## SRI SPOT SYMBOLS*

**X** ..... An area of recent or on-going landslide activity

 ..... Debris Avalanche Track

 ..... Marshy Areas and Wet Meadows

**W** ..... Water

**M** ..... Modal Site Location for Landtype

*Spot Symbols are used to identify areas of local importance which are too small to delineate at this mapping scale.

# PLANT SYMBOLS *

| | | | |
|---|---|---|---|
| ABCO | ABIES | *concolor* | *white fir* |
| ABLA | ABIES | *lasiocarpa* | *subalpine fir* |
| ABMA | ABIES | *magnifica* | *Shasta red fir* |
| ACCI | ACER | *circinatum* | *vine maple* |
| ACGL | ACER | *glabrum* | *Rocky mountain maple* |
| ACMA | ACER | *macrophyllum* | *big leaf maple* |
| ACTR | ACHLYS | *triphylla* | *vanillaleaf* |
| ADBI | ADENOCAULON | *bicolor* | *adenocaulon* |
| ALRU | ALNUS | *rubra* | *red alder* |
| AMAL | AMELANCHIER | *alnifolia* | *Saskatoon service berry* |
| ARMA | ARNICA | *macounii* | *clasping arnica* |
| ARME | ARBUTUS | *menziesii* | *Pacific madrone* |
| ARNE | ARCTOSTAPHYLOS | *Nevadensis* | *kinnikinnuck (pinemat manzanita)* |
| ARPA | ARCTOSTAPHYLOS | *patula* | *greenleaf manzanita* |
| ARVI | ARCTOSTAPHYLOS | *viscida* | *whiteleaf manzanita* |
| ASBR | ASTER | ***brickellioides*** | - |
| BENE | BERBERIS | ***nervosa*** | ***Cascade Oregon grape*** |
| BEPI | BERBERIS | *piperiana* | - |
| BERBE | BERBERIS | - | *Oregon grape* |
| CACH | CASTANOPSIS | *chrysophylla* | *golden chinkapin* |
| CAREX | CAREX | - | *sedges* |
| CEAND | CEANOTHUS | - | *ceanothus* |
| CECU | CEANOTHUS | *cuneatus* | *wedgeleaf ceanothus* |
| CEIN | CEANOTHUS | *integeprimus* | *deerbrush (greenstem ceanothus)* |
| CEPR | CEANOTHUS | *prostratus* | *squawcarpet* |
| CESA | CEANOTHUS | *sanguineus* | *redstem ceanothus* |
| CEVE | CEANOTHUS | *velutinus* | *snowbrush* |
| CHUM | CHIMPAPHILA | *umbellata* | *Prince's pine* |
| COCO | CORYLUS | *cornuta* | *California hazel* |
| CONU | CORNUS | *nuttalli* | *Pacific dogwood* |
| CYOC | CYNOGLOSSUM | *occidentale* | *western houndstongue* |
| DOAL | DODECATHEON | *alpinum* | *alpine shootingstar* |
| FRAGA | FRAGARIA | - | *strawberry* |
| GAAP | GALIUM | *aparine* | *Cleavers bedstraw* |
| GABI | GALIUM | *bifolium* | *twinleaf bedstraw* |
| GABO | GALIUM | *bolanderi* | *bolander bedstraw* |
| GAFR | GARRYA | *fremontii* | *Fremont silktassel* |
| GATR | GALIUM | *triflorum* | *sweetscented bedstraw* |
| GOOB | GOODYERA | *oblongifolia* | - |
| HODI | HOLODISCUS | *discolor* | *creamy ocenspray* |
| JUNCU | JUNCUS | - | *rushes* |
| LAPO | LATHYRUS | *polyphyllus* | *Pacific peavine* |
| LATHY | LATHYRUS | - | *peavine* |
| LIDE | LIBOCEDRUS | *decurrens* | *incense-cedar* |
| LINNA | LINNAEA | *borealis* | *twinflower* |
| LOHIV | LONICERA | *hispidula cacillans* | *California honeysuckle* |

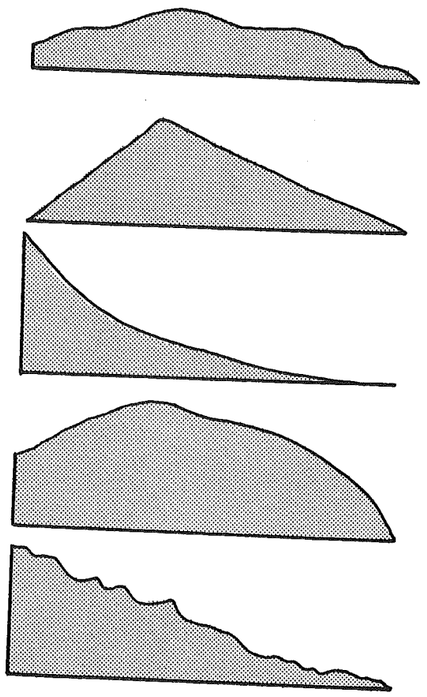
**NORTHWEST RANGE-PLANT SYMBOLS*
*RESEARCH PAPER PNW-40*



| | | | |
|---|---|---|---|
| LUAL | LUPINUS | *albicaulis* | *pine lupine* |
| LUAN | LUPINUS | *andersoni* | *pine lupine* |
| LUPIN | LUPINUS | - | *lupine* |
| MAHON | MAHONIA | - | *Oregon grape* |
| MICA | MIMULUS | *cardinalis* | *Crimson monkey flower* |
| MITR | MITELLA | *trifida* | *Tree-tooth miterwort* |
| PAMY | PACHISTIMA | *Myrsinites* | *Oregon boxwood* |
| PIAT | PINUS | *atenuata* | *knobcone pine* |
| PIBR | PICEA | *breweriana* | *Brewer's spruce* |
| PICO | PINUS | *contorta* | *lodgepole pine* |
| PIEN | PICEA | *Engelmannnii* | *Engelmann spruce* |
| PILA | PINUS | *lambertiana* | *sugar pine* |
| PIMO | PINUS | *monticola* | *western white pine* |
| PIPO | PINUS | *ponderosa* | *ponderosa pine* |
| POCA | POLYGONUM | *californicum* | - |
| PREM | PRUNUS | *emarginata* | *bitter cherry* |
| PSME | PSEUDOTSUGA | *menziesii* | *Douglas-fir* |
| PTERI | PTERIDIUM | - | *brackenfern* |
| PYPI | PYROLA | *picta* | *whitevine pyrola* |
| QUCH | QUERCUS | *chrysolepis* | *canyon live oak* |
| QUGA | QUERCUS | *kelloggii* | *California black oak* |
| QUKE | QUERCUS | *garryana* | *Oregon white oak* |
| RHDI | RHUS | - | *currant, gooseberry* |
| RIBES | RIBES | *diversiloba* | *poison oak* |
| RILO | RIBES | *lobbii* | *Lobbs gooseberry* |
| RIVI | RIBES | *viscasissimum* | *sticky currant* |
| RULE | RUBUS | *leucodermis* | *western blackcap* |
| RUMA | RUBUS | *macropetalus* | *trailing blackberry* |
| RUPA | RUBUS | *parviflorus* | *thimbleberry* |
| RUSP | RUBUS | *spectabilis* | *salmonberry* |
| RUUR | RUBUS | *ursinus* | *trailing blackberry* |
| SACE | SAMBUCUS | *cerulea* | *blue elderberry* |
| SAGL | SAMBUCUS | *glauca* | *blue elderberry* |
| SALIX | SALIX | - | *willow* |
| SARAA | SAMBUCUS | *racemosa* | *red elderberry* |
| SIHO | SILENE | *hookeri* | *hooker silene* |
| SIHY | SITANION | *hystrix* | *bottlebrush squirreltail* |
| SMRA | SMILACINA | *racemosa* | *feather solomonplume* |
| SMST | SMILACINA | *stellata* | *starry salomonplume* |
| SORBU | SORBUS | - | *mountain ash* |
| SYMPH | SYMPHORICARPOS | - | *snowberry* |
| TABR | TAXUS | *brevifolia* | *Pacific yew* |
| TROV | TRILLIUM | *ovatum* | *white trillium* |
| TSHE | TSUGA | *heterophylla* | *western hemlock* |
| TSME | TSUGA | *mertensiana* | *mountain hemlock* |
| VACA | VACCINIUM | *caespitosum* | *dwarf huckleberry* |
| VAHE | VANCOUVERIA | *hexandra* | *white inside-out-flower* |
| VAME | VACCINIUM | *membranaceum* | *big huckleberry* |
| VASI | VALERIANA | *sitchensis* | *sitka valerian* |
| VECA | VERATRUM | *californicum* | *California falsehellebore* |
| WHMO | WHIPPLEA | *modesta* | *whipplevine* |

# SLOPE NOMENCLATURE

## SHAPE



ROUNDED, GENTLY ROLLING, COMPLEX SLOPE

STRAIGHT SLOPE

CONCAVE SLOPE

CONVEX SLOPE

HUMMOCKY, BENCHY, COMPLEX SLOPE

## STEEPNESS

| | |
|---|---|
| Flat | 0 - 10% |
| Gentle | 10 - 30% |
| Moderately Steep | 30 - 50% |
| Steep | 50 - 65% |
| Very Steep | 65+% |

## DEGREE OF DISSECTION

| | |
|---|---|
| Smooth | - Fewer than 2 dissections per linear mile of slope |
| Slightly Dissected | - 2-3 dissections per linear mile of slope |
| Moderately Dissected | - 3-5 dissections per linear mile of slope |
| Highly Dissected | - More then 5 dissections per linear mile of slope |



# GLOSSARY OF TERMS

**Accelerated Erosion** - Erosion much more rapid than normal or natural erosion primarily as a result of the influence of the activities of man; or, in some cases, of other animals or natural catastrophies that expose base surfaces; for example, fires.

**Agglomerate** - Pyroclastic rocks consisting of accumulations of cemented angular rock fragments.

**Alignment** - The location of points with reference to a straight line or a system of straight lines associated with deformations in the earth's crust.

**Alluviation** - The deposition of mechanical sediments by running waters anywhere along their courses.

**Alluvium** - Stream deposits of gravelly sand, silt, or clay.

**Alpine** - Of, or pertaining to, any lofty mountain. Implies high elevation and cold climate.

**Andesite** - A dark gray to black, dense, fine-grained extrusive igneous rock. Very similar to basalt.

**Arete** - An acute and rugged crest of a mountain range, or a subsidiary ridge between two mountains or of a mountain spur such as that between two cirques.

**Ash** - Sand-size, light colored, rhyolitic, low bulk density, volcanic ejecta. Less than 4mm in size.

**Basalt** - A dark gray to black, dense, fine-grained extrusive igneous rock. Very similar to andesite.

**Basic Igneous Rocks** - An igneous rock rich in metallic base minerals such as amphibale, biotite, pyroxine and olivene and low in amounts of silica.

**Batholith** - A body of intrusive rock generally larger than 40 square miles in surface area. A similar body of smaller size is termed a stock.

**Bedrock** - The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Breccia** - Rock composed of angular fragments in the finer ground mass.

**Cinders** - Primarily uncemented, vesicular volcanic ejecta of basic composition ranging in size from 4 - 32 mm.

**Cirque** - A deep, steep-walled, semi-circular recess in a mountain caused by glacial carving and scouring action.

**Cirque Basin** - A half-amphitheater formed by alpine glaciation with three steep sides. Usually found at upper ends of valleys and along ridges.

**Clay** - A soil separate less than .002 millimeters in diameter. As a soil textural class, less than 45 percent sand and less than 40 percent silt.

**Coarse Fragments** - A term applied to 11 size ranges of free rock fragments found in a soil.

**Colluviation** - The transportation by gravity of loose rock fragments and soil material down a slope.

**Colluvium** - Soil material or rock fragments moved downslope by gravitational force in the form of soil creep, slides, and local wash.

**Compaction** - The packing together of soil particles by forces exerted at the soil surface, resulting in increased soil density.

**Complex** - An association in which two or more Landtype Units are so intricately mixed that it is not practical to show them separately at the scale of mapping used.

**Cryic** - A soil temperature regime that has mean annual soil temperatures of more than 0C but less than 8C, more than 5C difference between mean summer and mean winter soil temperatures at 50 cm, and cold summer temperatures.

**Cryo-planation** - Reduction of land surfaces by processes associated with freeze-thaw action.

**Debris Avalanche** - Also debris slide, a rapidly moving slide composed of soil, bedrock, or both.

**Dissected Terrain** - Highly irregular or segmented topographical surface caused by fluvial action.

**Droughtiness** - A very dry condition of the soil caused by the physical inability of the soil to retain plant available moisture except for short periods following precipitation.

**Duff** - The mat of accumulated organic debris covering the surface of the ground beneath coniferous vegetation.

**Environment** - All the conditions, circumstances and influences surrounding and affecting the development of an organism or system of organisms.



**Environmental Zone** - A broad management zone based upon prevailing climatological characteristics as well as general influences of aspect and elevations. Major vegatative type differences reflect significant changes in the above factors and define boundaries between Environmental Zones.

**Eolian** - Also aeolian. Of, relating to, formed by, or deposited from the wind or currents of air.

**Epoch** - Geologic time unit corresponding to a series; subdivision of a period. For example, Pliocene refers to the latest of the epochs in the Tertiary period.

**Erosion** - The wearing away of the land surface by running water, wind, ice or gravitational creep. Accelerated erosion may result from the activities of man or animals.

**Escarpment** - Also scarp. A cliff or relatively steep slope abruptly separating more gently sloping surfaces.

**Extrusion** - The emission of magmatic material or lava at the earth's surface.

**Extrusive Bedrock** - This applies to those igneous rocks derived from volcanic lavas that cooled on the surface of the earth. This lava rapidly cools and forms fine-textured rocks such as basalt and andesite.

**Fault** - Movement which has produced relative displacement of adjacent rock masses along a fracture.

**Felsic Rocks** - Rocks which contain an abundance of feldspar, lenads or silica.

**Fluviation** - The various erosional and gradational processes employed by streams.

**Fold** - A bend in a strata or any plane or structure.

**Frigid** - A soil temperature regime that has mean annual soil temperatures of more than 0C but less than 8C, more than 5C difference between mean summer and mean winter soil temperatures at 50 cm, and warm summer temperatures. Isofrigid is the same except the summer and winter temperatures differ by less than 5C.

**Geomorphology** - The study of landforms as they relate to geologic composition and history.

**Geomorphic Processes** - The various agents and processes responsible for the figure of the earth and the form of its surface. In general terms, these are: wind, waves, running water, glaciation, mechanical weathering, chemical weathering and tectonic or volcanic related activities.

Glacial - Deposits — Accumulations of debris or materials carried by glaciers or activities associated with the glacial processes. Glacial deposits include till, moraines, outwash and drift.

Glacial Moraine - See "Moraine".

Glacial - Outwash — Stratified drift deposited by meltwater streams.

Glacial - Pluck — The tearing away of projecting pieces of rock by glacial ice.

Glacial - Scour — The work of rock-waste being dragged along beneath a glacier.

Glacial Till - Glacial materials deposited directly by ice with little or no transportation by water. It is generally an unconsolidated, unstratified compact mixture of clay, silt, sand, gravel and boulders.

Glacial - Trough — A U-shaped valley formerly occupied by a glacier. Also glaciated or glacial valley.

Glaciation - Alteration of the earth's solid surface through erosion and deposition of glacier ice. Alpine glaciation is limited to mountainous or high elevation terrain.

Glacier - A body of ice originating on land by the recrystalization of snow or other forms of solid precipitation and showing evidence of past or present flow.

Glacio-fluvial - Also fluvioglacial. Pertaining to streams flowing from glaciers or to the deposits made by such streams.

Grus - Also dg. An accumulation of fragmental products derived from the weathering of granite in its passage from solid rock to soil.

Hanging Valley - A tributary valley whose floor is higher than the flow of the trunk or main valley to which it leads at the area of junction.

Heavy Soil - A soil high in clay. This generally includes clay loams, silty clay loams, silty clays, and clays. Term does not have any relation to the actual weight or density of a soil mass. A non-technical term.

Hummocky - Hilly, uneven landscape resulting from soil movement, usually of a deep-seated nature but frequently resulting from soil creep.



Inclusion - Landtype found within a mapping unit that is not extensive enough to be mapped separately or as part of a complex.

Intercalated - One body of material interbedded or interlaminated with another.

Intrusive Rocks - This applies to those rocks derived from magmas that have been injected into older rocks at depth without reaching the surface. These magmas are slow cooling and form coarse-textured rocks, such as granite.

Landflow - A term used in this report to identify areas where large scale, deep-seated mass wasting has occurred and is occurring. Most landflows identified in the mapping show evidence of rotational, translational (planar), and creep types of failure which have occurred and are occurring under saturated conditions.

Landform - Structural configuration of the topography as a result of past and present geological activity.

Landtype - A mapping unit which contains a definable range of characteristics involving soils, landform, climate, vegetation and position.

Light Soil - A soil with a low percentage of clay. Includes loamy sands, sandy loams, and some loams. Term does not have any relation to the actual weight or density of a soil mass. A non-technical term.

Loam - A soil textural category in which the particle size distribution favors none of the individual, separate sizes. A loam contains 7-27% clay, 28-50% silt, and less than 52% sand.

Mafic Rocks - See Basin Igneous rocks.

Mass Wasting - A general term for a variety of processes by which large masses of earth materials are moved by gravity, either slowly or rapidly, from one place to another. A general term for most types of mass movement.

Mesic - A soil temperature regime that has mean annual soil temperatures of 8C or more but less than 15C, and more than 5C difference between mean summer and mean winter soil temperatures at 50 cm. Isomesic is the same except the summer and winter temperatures differ by less than 5C.

Metamorphic Rocks - All rocks which have been chemically and physically altered from their original condition by heat and pressure within the earth. Terms such as metasedimentary and metavolcanic indicate the condition or type of rock existing prior to metamorphism. Terms such as these generally imply incomplete metamorphism.

Miscellaneous Landtype - A mapping unit for areas of land that have little or no natural soil or have properties that are too variable and unpredictable for classification.

Montmorillonite - An aluminosilicate clay mineral with a 2:1 expanding crystal lattice; that is, with two silicon tetrahedral layers enclosing an aluminum octahedral layer. Considerable expansion may be caused along the C axis by water moving between silica layers of contiguous units.

Moraine - An accumulation of till and/or drift having initial constructional topography independent of control by the surface on which it lies and built by the direct action of glacier ice. 1. End Moraine - Moraine marking the terminal position of a valley glacier. 2. Ground moraine - The material deposited by a glacier on the ground surface over which the glacier has moved. 3. Lateral Moraine - A moraine built along the lateral margins of a glacier lobe occupying a valley.

Morainic - Of, pertaining to, forming, or formed by a moraine.

Natural Erosion - Wearing away of the earth's surface by water, ice, or other natural agents under natural environmental conditions of climate, vegetation, etc., undistrubed by man.

Nivation - Frost action and mass wasting beneath a snowbank.

Normal Erosion - The gradual erosion of land used by man which does not greatly exceed natural erosion. See natural erosion.

Parent Material - The horizon of weathered rock or partially weathered soil-like material accumulations from which the soil is formed. The C horizon of the soil profile.

Parent Rock - The original rock from which soil parent materials are formed.

Paternoster Lakes - A chain of small glacial lakes connected by a drainage.

Physiographic Province - A region of similar structure and climate that has had a uniform geomorphic history.



Physiographic Sub-Province - A logical and somewhat extensive subdivision of a Physiographic Province. In regards to the High Cascade Physiographic Province for instance, Sub-Provinces might be determined on the basis of evidence indicating the absence or presence of glaciation. Likewise, a granitic batholith in the Klamath Mountains Physiographic Province may be defined as a Sub-Province.

Physiography - The study of the genesis and evolution of land forms.

Piping - Subterranean erosion initiated by percolating water which removes solid, generally silt-size particles to produce tubular underground conduits along zones exhibiting a reduction in hydraulic conductivity.

Plateau - An extensive elevated region of flat or hilly surface, sometimes intersected by ranges of mountains. Any extensive range of generally flat, elevated country that is over 1,000 feet elevation.

Pluck - See "Glacial Pluck".

Pumice - An excessively cellular, light-colored glassy lava, generally of rhyolitic composition. A sort of volcanic froth. It has a very low bulk density. Greater than 4 mm in size as used in this report.

Pumice Flow - An avalanche of fragmented pumice, generally a highly heated mixture of volcanic gasses, ash, glass dust, and pumice, down the flanks of a volcano.

Pyroclastic Rocks - A general term applied to rocks formed from volcanic material that has been explosively or aerially ejected from a volcanic vent.

Residuum - Residual material. Unconsolidated and partly weathered mineral materials accumulated by disintegration of consolidated rock in place.

Restrictive Layer - Any soil layer which impedes the downward movement of water through the soil. Root penetration is also frequently limited by the presence of such a layer. The cause of this layer may be due to compaction, cementation or the presence of high amounts of clay.

Rhyolite - A light-colored, fine-grained silicic, extrusive rock.

River and Creek Wash - Barren alluvial land, usually coarse-textured, exposed along streams at low water and subject to shifting during normal high water.

Runoff - That part of the precipitation which appears in surface streams of either perennial or intermittent form.

Sand - A soil separate between .05 and 2.0 millimeters in diameter.

Scalping - The removal of a specified layer of the surface soil by mechanical means.

Scarification - The mechanical act of breaking and/or stirring the immediate soil surface in place. Term does not imply removal of soil or organic material.

Schist - A medium or coarse-grained metamorphic rock with subparallel orientation of the micaceous minerals which dominate its composition.

Scoria - Volcanic ejecta, usually of basic composition, characterized be marked vesicularity (very cellular), dark color, heaviness, and a texture that is partly glassy and partly crystaline. Fragments of scoria between 4 mm and 32 mm are essentially equivalent to volcanic cinders.

Scour - See "Glacial Scour".

Sedimentary Rock - A rock formed by deposition of soil and rock particles by water, ice or wind that later solidifies through cementation, ionic exchange or compression.

Serpentine - A rock consisting almost wholly of serpentine minerals derived from the alteration of previously existing olive and pyroxene.

Silt - A soil separate consisting of particles between 0.002 and 0.05 millimeters in diameter.

Slope Wash - Soil material that is being or has been transported and deposited downslope by the action of gravity and running water that is not concentrated in channels. The term also applies to the process by which this material is moved.

Slump - The downward slipping of a mass of unconsolidated material, moving as a unit, usually with a backward rotation.

Soil - Any and all loose, incoherent, unconsolidated weathered material on the earth's surface resting on solid, consolidated, unweathered bedrock, no matter how formed, or origin, or method of weathering or deposition. Generally includes any material that may be moved or broken by hand tools or heavy equipment without the need of blasting except soft, unweathered bedrock. In soil horizon designation, soil materials included "A", "B", and "C" horizons.

Soil Puddling - The act of destroying soil structure by manipulating a soil when it is in a wet and plastic condition. Puddling reduces porosity and permeability.



Soil Texture - The relative proportions of the various soil separates in a soil as described by the classes of soil texture. The textural classes may be modified by the addition of suitable adjectives when coarse fragments are present in substantial amounts; for example: "stony silt loam", or "silt loam, stony phase".

Sub-Soil - A layer of the earth's mantle which lies above unmodified parent material or rock and below horizons of organic matter accumulation and eluviation. In this report, the term applies to the main part of the "B" horizon and/or the upper part of the "C" horizon.

Sub-Stratum - A layer of unmodified parent material or rock lying immediately below the sub-soil. In this report, the term applies to material occurring below the upper "C" horizon(s).

Surface Soil Layers - Mineral soil layers formed for forming at or near the surface which exhibit an accumulation of humified organic matter intimately associated with the mineral fraction. These layers also exhibit eluviation, or the downward leaching of fine particles of clay and various other minerals. In this report, the term applies to the "A" horizons and the upper "B" horizon.

Talus - Also Scree. The fragments of loose rock or debris building at the base of a disintegrating cliff or rock outcrop. Also, the natural slope formed by such a process and materials.

Tectonic - Of, pertaining to, or designating the rock structure and external forms resulting from the deformation of the earth's crest.

Terrace - A plain from which the surface ascends on one side and descends on the other. The decent from an alluvial terrace to a water course may be very abrupt. Types of terraces: alluvial terrace, fan terrace, marine terrace, and lacustrine terrace.

Till - See "Glacial Till".

Toe Slope - That portion of a slope that is transitional between the valley floor and the upper slope, also toeslope.

Tuff - A rock formed of compacted volcanic fragments and ash generally less than 4 mm in diameter.

Udic - A soil moisture regime that is neither dry for as long as 90 cumulative days nor for as long as 60 consecutive days in the 90 days following the summer solstice at periods when the soil temperature at 50 cm is above 5C.

Ultrabasic Rock - Rocks containing less than 45% silica; containing no quartz or feldspar and composed essentially of ferromagnesian silicates, metallic oxides and sulfides and native metals. Serpentine and peridotite are forms found within the survey area.

Ultramafic Rock - See "Ultrabasic Rock".

U-Shaped Valley - Descriptive phrase of the cross profile of a valley which has been carved out by glacial movement.

Valley Train - A body of glacial outwash deposits confined within a valley that is generally long and narrow.

Volcanic Ash - See "Ash".

Volcanic Ejecta - Any and all material forcibly blown out of volcanic cones, fissures, and vents.

Volcanic Plug - The solidifed material filling a vent or pipe of a dead volcano. Plugs often stand as columns or crags of igneous rock on eroded volcanoes. In this report, the term is used synonymously with volcanic neck.

Volcanism - All natural processes resulting in the formation of volcanoes, volcanic rocks, lava flows, cinder cones, etc., also vulcanism.

V-Shaped Valley - A descriptive phrase of the cross profile of a valley which has been cut by stream action.

Xeric - A soil moisture regime common to Mediterranean climates that have moist cool winters and warm dry summers. A limited amount of moisture is present but does not occur at optimum periods for plant growth. Irrigation or summerfallow is commonly necessary for crop production.



## SELECTED REFERENCES


AMERICAN GEOLOGICAL INSTITUTE. Glossary of Geology. The American Geological Institute 375 1960.

ANDERSON, David A. Guidelines For Computing Quantified Soil Erosion Hazard and On-Site Erosion. USDA Forest Service, Southwestern Region, 30 pp, October 1969.

BALDWIN, Ewart M. Geology of Oregon, Edwards Brothers Inc., Ann Arbor, Michigan, 1959.

CARVER, Gary. 1973. "Glacial Geology of the Mountain Lakes Wilderness and Adjacent Parts of the Cascade Range." Unpublished Thesis. University of Washington.

FRANKLIN, Jerry F. and Dyrness, C. T., Natural Vegetation of Oregon and Washington, USDA, Forest Service General Technical Report PNW-8, 1973.

GRIFFEN, James R. 1967. "Soil Moisture and Vegetation Patterns in Northern California Forests", Berkeley, Calif., USDA Forest Service Research Paper, PSW-46.

LOBECK, A. K. 1939. Geomorphology. McGraw-Hill. New York. 1972.

MCKEE, Bates. Cascadia. McGraw-Hill, Inc. 1972

MAYNARD, L. C. 1974. "Geology of Mt. McLoughlin". Unpublished Thesis. University of Oregon.

THORNBURY, W. D. 1954. Principles of Geomorphology. John Wiley. New York.

THORNBURY, W. D. 1965. Regional Geomorphology of the United States. John Wiley. New York.

WARING, R. H. "Forest Plants of the Eastern Siskiyous: Their Environmental and Vegetational Distribution; Northwest Science, Vol. 43, No. 1, 1969.

WELLS, F. G. and Peck, D. L. Geologic Map of Oregon west of the 121st Meridian, U.S. Geol. Survey Misc. Geol. Inv. Map I-325, 1961.

WHITTAKER, R. H. "Vegetation of the Siskiyou Mountains, Oregon and California", Ecological Monographs, Vol. 30, No. 3. July 1960.

_____ Geologic Map of California, WEED SHEET, Olaf P. Jenkins Edition, Division of Mines and Geology. 1964.

_____ Glossary of Soil Science Terms, The Soil Science Society of America Proceedings, pp.330-351m 1965.




☆GPO 797-838

# S.R.I. CORRECTIONS

| | |
|---|---|
| Page 5 | Second paragraph: 1st line, change oliving to olivine<br>Third paragraph: 1st line, change oliving to olivine<br>Third paragraph: 2nd line, change oliving to olivine<br>Third paragraph: 4th line, change lave to lava<br>Fourth paragraph: 1st line, change withe to white<br>Eighth paragraph: 1st line, change KJif to Kjif<br>Eighth paragraph: 1st line, change gran to gray<br>Eleventh paragraph: 2nd line, change shite to white |
| Page 12 | P - Principal Forest - Change legend PFME to PSME. |
| Page 69 | Soil 3100 - 5th paragraph, change Soil 3100 <u>if</u> found to <u>is</u> found. |
| Page 70 | Soil 3600 - Same as above. |
| Page 93 | Landtype 13 - 2nd paragraph, 5th line - Add the word poorly after somewhat. |
| Page 111 | Add map Unit No. 15-H and 32-H. |
| Page 112 | Change 174A 65% <u>18A</u> to 65% <u>17A</u>.<br>Complex 120 may not be valid.<br>204-H - Notice <u>35%</u> 26-H and 35% 0, change to <u>65%</u> 26-H. |
| Page 113 | Add Complex No. 239H and 243 (243 is made up 24 and 3 comprising 640 acres). |
| Page 114 | Add Complex No. 421-H. |
| Page 129 | 27-H, 5th column - ABMA, <u>PILO</u> should be <u>PICO</u>. |
| Map 4 | Upper forest zone - add H to 40 in Section 16, R1E.<br>Lower forest zone - eliminate line between units 40 in Section 21, R1E. |
| Map 5 | Lower forest zone - Section 11, T32N, R2E - eliminate number 423 within 429 unit. Change 423 to 426 in Section 11, T31S, R2E (that area surrounded by 41). and 12) |
| Map 6 | Upper forest zone - Section 10, T32S, R4E, change 173H to 173A.<br>Section 29, T31S, R4E, add 31H to blank delineation. |
| Map 7 | Sub-alpine forest zone - Extreme NE corner of map change 174H to 174A. |

Map 8 — Sections 9 and 16, T34S, R4E, Unit 35-H should be shaded indicating the upper forest zone.

Page 186 — Unit 90 - Change Recent to Stream Alluvial---Eliminate last sentence (Veg. is generally lacking.)

Page 188 — Add: Complex 519.

Page 198 — Eliminate footnote (Refers to Available Water Holding Capacity [AWHC]).

Page 203 — Add to "The remaining landtypes are non-forested" except Landtype 99.

Map 12 — Add Unit 82 to the blank delineation in Section 21, T39S, R1E.

Map B — Convert the 19 to 91 in Sections 3 and 4, T40S, R3W
Convert the 37 to 73 in Section 31, T40S, R1W and in Section 1, T40S, R2W.

Map 14 — Convert the 97 to 92 in Section 11, T41S, R2W.

Map 15 — Convert the unit 7 to 71 in the extreme NE corner of the map.

Remove the Unit 746 unside the unit 753 in Sections 26 and 27, T40S, R4W.

Remove the two 971 symbols in the 931 unit in Sections 23 and 26, T40S, R4W.

Map 16 — All shown as Environmental Zone III but some are actually Environmental Zone II. Starting in the NW corner,

Unit 93 is in Zone III
585 is in Zone III
55 should be Zone II
585 is in zone III
55
To match up with Map 15 571
775
585
99 } line
571
59
58
should be in Zone II

Delete the line between two map units 55 in Section 8, T41S, R8E.

Page 226 — Change CEAND to CEANO

Page 227 — Add PIJE Pinus jefferyi
Reverse QUGA and QUKE

NOTE: PLEASE SEND IN ANY ADDITIONAL CORRECTIONS AS YOU FIND THEM.