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Agriculture



Forest Service
and



Natural
Resources
Conservation
Service

Soil Survey of Deerlodge National Forest Area, Montana



The original maps and tables, except for climate tables, have been deleted from this online version. Since publication of the soil survey, more data on soil properties may have been collected, new interpretations developed, or existing interpretive criteria modified. Maps and current data tables can be accessed through the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>).

How to Use This Soil Survey

The detailed soil maps can be useful in planning the use and management of small areas. You can access the detailed soil maps at the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>).

Go to the web site and follow the instructions to access the maps. Once the area of interest (AOI) has been selected, the “Soil Map” tab will provide a view of the detailed soil map and a legend that is hyperlinked to map unit descriptions. Click on the “Soil Data Explorer” tab to access the interpretations and reports. Report categories and subcategories include Suitabilities and Limitations for Use, Soil Properties and Qualities, and Soil Reports. Interpretive data can also be accessed at the Soil Data Mart (<http://soildatamart.nrcs.usda.gov/>).

See the [Contents](#) for sections of this publication that may address your specific needs.

National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies, including the Agricultural Experiment Stations, and local agencies. The fieldwork and technical quality control for this survey were conducted by the Forest Service. The correlation of the soils was conducted by the Natural Resources Conservation Service in consultation with the Forest Service. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1999. Soil names and descriptions were approved in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1999. The most current official data are available at <http://websoilsurvey.nrcs.usda.gov/app/>.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover Caption

Spire Rock Flats looking west toward Spire Rock

Photo credit: Michael Garverich

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.

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| 35UC4 | Garlet-Cowood families-Rock outcrop complex, very steep trough walls | 118 |
| 35UD4 | Garlet-Cowood families-Rock outcrop complex, very steep trough walls, moist | 120 |
| 15VD3 | Garlet-Cowood-Elvick families, complex, steep glaciated mountain slopes and ridges | 52 |
| 15VE2 | Garlet-Cowood-Worock families, complex, steep glaciated mountain slopes and ridges | 56 |
| 71UC3 | Garlet-Gambler-Worock families, complex, high relief mountain slopes and ridges | 253 |
| 51UD3 | Garlet-Tigeron families-Rubble land complex, steep ridges and mountain slopes | 176 |
| 51VD3 | Garlet-Tigeron families-Rubble land complex, steep volcanic ridges and mountain slopes | 190 |
| 15CD3 | Garlet-Tropal-Whitore families, complex, steep glaciated mountain slopes and ridges | 14 |
| 71UD3 | Garlet-Worock families-Rock outcrop complex, high relief mountain slopes | 257 |
| 71VD3 | Garlet-Worock families-Rock outcrop complex, high relief volcanic mountain slopes | 268 |
| 37UC2 | Garlet-Worock-Elvick families, complex, moderately steep trough bottoms | 128 |
| 21UC3 | Garlet-Worock-Waldbillig families, complex, moderately steep young moraines | 72 |
| 21UD2 | Garlet-Worock-Waldbillig families, complex, moderately steep young moraines, cool | 76 |
| 518F | Germangulch-Eastridge-Euell complex, 25 to 60 percent slopes, very stony | 545 |
| 75GD4 | Goldflint family-Rock outcrop-Ovando family, complex, low relief mountain slopes and ridges | 297 |
| 50 | Hanson channery loam, 8 to 45 percent slopes..... | 148 |
| 71CH3 | Hanson-Tiban families-Rock outcrop complex, high relief mountain slopes and ridges | 225 |
| 51CH2 | Hanson-Tiban families-Rubble land complex, steep ridges and mountain slopes | 154 |

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| 2121F | Hapgood family-Hanson-Tiban complex, 25 to 60 percent slopes, very stony | 791 |
| 84E | Helmville cobbly loam, cool, 15 to 35 percent slopes | 339 |
| 84F | Helmville cobbly loam, cool, 35 to 60 percent slopes | 340 |
| 71CC3 | Helmville-Garlet families, complex, high relief mountain slopes and ridges | 221 |
| 75CC2 | Helmville-Relyea-Whitore families, complex, low relief mountain slopes and ridges | 272 |
| 71CB3 | Helmville-Whitore-Garlet families, complex, high relief mountain slopes and ridges | 217 |
| 385D | Highrye-Beeftail complex, 4 to 15 percent slopes..... | 480 |
| 327E | Highrye-Stecum-Wissikihon complex, 15 to 30 percent slopes..... | 441 |
| 1564E | Hilger, very stony-Hilger, rubbly-Rock outcrop complex, 8 to 35 percent slopes..... | 731 |
| 1734F | Hiore, stony-Kurrie, stony-Caseypeak, very stony, complex, 35 to 60 percent slopes..... | 758 |
| 1871E | Hiore, stony-Rock outcrop complex, 15 to 35 percent slopes..... | 767 |
| 1871F | Hiore, stony-Rock outcrop complex, 35 to 70 percent slopes..... | 769 |
| 1872E | Hiore-Clugulch-Rock outcrop complex, 15 to 35 percent slopes..... | 770 |
| 1872F | Hiore-Clugulch-Rock outcrop complex, 35 to 70 percent slopes..... | 772 |
| 51VE3 | Hiore-Tigeron families-Rubble land complex, steep ridges and mountain slopes | 192 |
| 81E | Holloway gravelly silt loam, 15 to 35 percent slopes | 333 |
| 51ND3 | Holloway-Evaro-Bata families, complex, steep ridges and mountain slopes | 168 |
| 541F | Hungryhill-Euell complex, 20 to 50 percent slopes, very stony..... | 554 |
| 532E | Hungryhill-Poin-Larkspur complex, 15 to 45 percent slopes, stony | 551 |
| 545G | Illiano, very stony-Rock outcrop-Rubble land complex, 45 to 75 percent slopes..... | 564 |
| 2281F | Judco, stony-Torpy, stony-Rock outcrop complex, 35 to 60 percent slopes..... | 801 |
| 1823F | Kellygulch, stony-Shaboom, very bouldery-Rock outcrop complex, 35 to 60 percent slopes | 761 |
| 28C | Kilgore-Danielvil complex, 2 to 8 percent slopes | 99 |
| 597C | Kilgore-Foolhen-Philipsburg complex, 2 to 12 percent slopes..... | 597 |
| 612A | Kilgore-Foxgulch complex, 0 to 4 percent slopes..... | 603 |

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| 982F | Kimpton, very bouldery-Rock outcrop-Tiban, very bouldery, complex, 25 to 50 percent slopes..... | 698 |
| 15UE3 | Kloutch family-Rock outcrop-Elvick family, complex, steep glaciated mountain slopes and ridges..... | 49 |
| 35UE4 | Kloutch family-Rock outcrop-Sig family, complex, very steep trough walls | 122 |
| 15UE2 | Kloutch family-Rock outcrop-Waldbillig family, complex, steep glaciated mountain slopes and ridges..... | 47 |
| 51UE3 | Kloutch family-Rubble land-Waldbillig family, complex, steep ridges and mountain slopes | 181 |
| 51NE3 | Kloutch, noncalcareous-Waldbillig, noncalcareous families-Rubble land complex, steep ridges and mountain slopes..... | 170 |
| 51UE2 | Kloutch-Waldbillig families-Rubble land complex, steep ridges and mountain slopes | 179 |
| 75GD2 | Kurrie-Goldflint-Warwood families, complex, low relief mountain slopes and ridges | 294 |
| 51GE2 | Leighcan family-Rubble land-Ovando family, complex, steep ridges and mountain slopes | 161 |
| 75GEB | Leighcan-Kurrie-Jeru families, complex, nivational mountain slopes and ridges | 299 |
| 54Eg | Libeg channery loam, 15 to 35 percent slopes | 197 |
| 54B | Libeg channery loam, 2 to 4 percent slopes | 195 |
| 54E | Libeg gravelly loam, 15 to 35 percent slopes | 197 |
| 54D | Libeg gravelly loam, 8 to 15 percent slopes | 196 |
| 997E | Libeg, stony-Monaberg-Adel complex, 15 to 35 percent slopes..... | 709 |
| 75VH2 | Libeg-Copenhaver families, complex, low relief mountain slopes and ridges | 329 |
| 51VH2 | Libeg-Copenhaver families-Rubble land complex, steep ridges and mountain slopes | 193 |
| 21UH2 | Libeg-Marcetta-Finn families, complex, moderately steep young moraines..... | 82 |
| 996D | Libeg-Monaberg complex, 2 to 15 percent slopes, bouldery | 707 |
| 854E | Libeg-Monad-Copenhaver complex, 15 to 35 percent slopes..... | 662 |
| 15GH3 | Libeg-Opitz-Copenhaver families, complex, steep glaciated mountain slopes and ridges | 33 |
| 71VH3 | Libeg-Sebud-Copenhaver families, complex, high relief mountain slopes and ridges | 270 |
| 64UH2 | Libeg-Sebud-Finn families, complex, rolling stream terraces and flood plains | 207 |
| 21GJ1 | Lilylake-Mariel families, complex, alluvial basins | 65 |
| 85E | Loberg gravelly loam, 15 to 35 percent slopes..... | 341 |

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| 75DCD | Loberg-Danaher-Elvick families, complex, low relief mountain slopes and ridges | 276 |
| 22UD2 | Loberg-Elvick-Garlet families, complex, moderately steep old moraines..... | 95 |
| 22UC2 | Loberg-Worock-Danaher families, complex, moderately steep old moraines..... | 91 |
| 22UCD | Loberg-Worock-Danaher families, complex, unstable moderately steep old moraines | 93 |
| 18B | Lone Rock cobbly loam, 0 to 4 percent slopes..... | 60 |
| 2261E | Lowland loam, 15 to 35 percent slopes, stony | 800 |
| 2322E | Lowland-Torpy complex, 15 to 35 percent slopes | 811 |
| 2322F | Lowland-Torpy complex, 35 to 60 percent slopes | 812 |
| 1361E | Lumpgulch, bouldery-Rock outcrop-Elmark, bouldery, complex, 8 to 35 percent slopes | 720 |
| 1965E | Lumpgulch, bouldery-Ymark, very bouldery-Rock outcrop complex, 15 to 45 percent slopes | 775 |
| 121E | Maiden-Lap-Rock outcrop complex, 15 to 35 percent slopes..... | 377 |
| 122E | Maiden-Lap-Windham complex, 15 to 35 percent slopes | 379 |
| 2391C | Marcel, very bouldery-Tibkey, bouldery, complex, 2 to 8 percent slopes..... | 815 |
| 702E | Maurice, very stony-Maurice-Sigbird, very stony, complex, 12 to 35 percent slopes..... | 616 |
| 718E | Maurice-Libeg complex, 8 to 30 percent slopes, very stony..... | 622 |
| 51NH2 | Maurice-Marcetta-Libeg families, complex, steep ridges and mountain slopes | 172 |
| 741F | Maurice-Sigbird-Surdal complex, 20 to 50 percent slopes, stony..... | 630 |
| 739E | Maurice-Surdal-Mawspring complex, 12 to 35 percent slopes, stony | 628 |
| 384E | Minestope, extremely bouldery-Branham, extremely bouldery-Rock outcrop complex, 8 to 35 percent slopes | 479 |
| 394E | Minestope, very stony-Beeftail, very stony-Rock outcrop complex, 8 to 30 percent slopes | 487 |
| 190E | Mocmont gravelly loam, cool, 15 to 35 percent slopes | 405 |
| 2301F | Mocmont, bouldery-Roegulch, rubbly-Rock outcrop complex, 25 to 60 percent slopes | 803 |
| 91E | Mohaggin stony ashy very fine sandy loam, 15 to 35 percent slopes..... | 348 |
| 791F | Mohaggin-Rubble land complex, 35 to 60 percent slopes | 648 |
| 791G | Mohaggin-Rubble land complex, 60 to 80 percent slopes | 649 |
| 124E | Monaberg-Bridger complex, 8 to 30 percent slopes, very stony..... | 381 |

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| 112E | Monaberg-Bridger-Libeg, stony, complex, 8 to 25 percent slopes..... | 371 |
| 2331B | Mooseflat loam, 1 to 4 percent slopes | 814 |
| 595D | Mooseflat, very stony-Pappascreek, very stony-Euell complex, 2 to 15 percent slopes | 592 |
| 331C | Mooseflat-Foolhen-Fleecer complex, 2 to 8 percent slopes..... | 445 |
| 165A | Mooseflat-Foxgulch complex, 0 to 4 percent slopes | 395 |
| 303D | Moosejaw-Highrye-Silas complex, 2 to 15 percent slopes.... | 422 |
| 1642F | Nieman, bouldery-Rock outcrop-Libeg, very bouldery, complex, 25 to 60 percent slopes | 746 |
| 1643E | Nieman, stony-Libeg complex, 15 to 35 percent slopes..... | 748 |
| 1641E | Nieman, very stony-Rock outcrop-Libeg, bouldery, complex, 15 to 45 percent slopes | 744 |
| 624B | Nirling-Bandy complex, 0 to 4 percent slopes, rarely flooded | 606 |
| 523E | Nissler-Euell complex, 12 to 30 percent slopes | 548 |
| 91 | Nuley-Rock outcrop complex, 8 to 35 percent slopes | 347 |
| 51GH2 | Opitz-Bavdark families-Rubble land complex, steep ridges and mountain slopes | 165 |
| 75GH2 | Opitz-Bavdark-Marcetta families, complex, low relief mountain slopes and ridges | 301 |
| 21GH2 | Opitz-Libeg-Sebud families, complex, moderately steep young moraines..... | 63 |
| 312D | Oro Fino-Highrye-Branham complex, 4 to 15 percent slopes..... | 428 |
| 94 | Oro Fino-Poin complex, 15 to 45 percent slopes | 353 |
| 51GE3 | Ovando family-Rubble land-Leighcan family, complex, steep ridges and mountain slopes | 162 |
| 21UE2 | Ovando-Bata families-Rock outcrop complex, moderately steep young moraines | 79 |
| 64GD1 | Ovando-Blackleed families-Cryofluvents complex, rolling stream terraces and flood plains | 198 |
| 15GD3 | Ovando-Blackleed families-Rock outcrop complex, steep glaciated mountain slopes and ridges..... | 23 |
| 21GD2 | Ovando-Blackleed-Petty families, complex, moderately steep young moraines | 61 |
| 37GD2 | Ovando-Caseypeak families-Rock outcrop complex, moderately steep trough bottoms..... | 124 |
| 75GD1 | Ovando-Goldflint-Blackleed families, complex, low relief mountain slopes and ridges | 292 |
| 15GE2 | Ovando-Jeru-Roman families, complex, steep glaciated mountain slopes and ridges | 28 |
| 15GDE | Ovando-Littlesalmon-Bata families, complex, steep glaciated mountain slopes and ridges | 25 |

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| 15GD2 | Ovando-Petty-Littlesalmon families, complex, steep glaciated mountain slopes and ridges..... | 21 |
| 15GC3 | Ovando-Rubick-Caseypeak families, complex, steep glaciated mountain slopes and ridges..... | 19 |
| 340E | Peeler gravelly sandy loam, 8 to 25 percent slopes | 454 |
| 419E | Peeler-Comad complex, 8 to 30 percent slopes, very stony..... | 504 |
| 95 | Pensore-Crago, cool-Rock outcrop complex, 25 to 75 percent slopes..... | 356 |
| 42Ej | Perma cobbly loam, 15 to 25 percent slopes, stony..... | 142 |
| 338E | Perma cobbly loam, 15 to 35 percent slopes | 453 |
| 338C | Perma cobbly loam, 4 to 8 percent slopes | 452 |
| 41E | Perma gravelly loam, 15 to 35 percent slopes | 141 |
| 542Ep | Perma very bouldery loam, 8 to 25 percent slopes..... | 558 |
| 75UHF | Perma-Brazil families-Rock outcrop complex, low relief mountain slopes and ridges | 320 |
| 421F | Perma-Whitlash complex, 35 to 60 percent slopes, very stony..... | 508 |
| 115D | Philipsburg-Ratiopeak complex, 8 to 15 percent slopes | 373 |
| 68E | Phillcher gravelly ashy silt loam, 15 to 45 percent slopes | 213 |
| 68D | Phillcher gravelly ashy silt loam, 4 to 15 percent slopes | 212 |
| 562G | Poin, very stony-Rubble land-Eastridge, very stony complex, 25 to 70 percent slopes | 578 |
| 75UH2 | Ratiopeak-Cheadle-Marcetta families, complex, low relief mountain slopes and ridges | 318 |
| 142E | Ratiopeak-Philipsburg complex, 15 to 35 percent slopes, very stony..... | 384 |
| 912D | Ratiopeak-Redchief complex, 4 to 15 percent slopes, stony..... | 676 |
| 15UH2 | Ratiopeak-Sebud-Arrowpeak families, complex, steep mountain slopes and ridges | 50 |
| 22UH2 | Redchief-Libeg-Finn families, complex, moderately steep old moraines..... | 97 |
| 145E | Redchief-Mollet complex, 15 to 35 percent slopes | 387 |
| 145C | Redchief-Mollet complex, 4 to 8 percent slopes | 385 |
| 145D | Redchief-Mollet complex, 8 to 15 percent slopes | 386 |
| 71UHD | Redchief-Mollet-Sebud families, complex, high relief mountain slopes and ridges | 262 |
| 952F | Redfern, bouldery-Rock outcrop-Tigeron family, very bouldery, complex, 25 to 60 percent slopes..... | 685 |
| 953F | Redfern, rubbly-Rock outcrop-Rubble land association, 25 to 60 percent slopes..... | 687 |
| 2485F | Redfern, rubbly-Rock outcrop-Tigeron family, very bouldery, association, 25 to 70 percent slopes | 822 |
| 185E | Relyea-Helmville complex, 15 to 35 percent slopes..... | 403 |

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| 2043F | Rencot, very stony-Rencot, bouldery-Rock outcrop association, 15 to 60 percent slopes..... | 782 |
| 634E | Rencot, very stony-Rock outcrop-Bronec, very stony, complex, 25 to 45 percent slopes | 607 |
| K | Rock outcrop and Rubble land..... | 832 |
| 2041F | Rock outcrop-Catgulch, bouldery, complex, 15 to 70 percent slopes..... | 781 |
| 777E | Rock outcrop-Clugulch-Bobowic complex, 15 to 35 percent slopes..... | 639 |
| 777F | Rock outcrop-Clugulch-Bobowic complex, 35 to 70 percent slopes..... | 641 |
| 361G | Rock outcrop-Goldflint-Rubble land complex, 45 to 80 percent slopes..... | 459 |
| 35UK4 | Rock outcrop-Sig family, complex, very steep trough walls | 123 |
| 37UE3 | Rock outcrop-Sig-Jeru families, complex, moderately steep trough bottoms | 134 |
| 31UE4 | Rock outcrop-Sig-Kloutch families, complex, very steep cirques..... | 105 |
| 35CE4 | Rock outcrop-Tropal family-Rubble land complex, very steep trough walls | 113 |
| 15GE3 | Roman-Crawfish families, complex, steep glaciated mountain slopes and ridges | 30 |
| 44E | Roundor loam, 15 to 35 percent slopes | 145 |
| 440D | Roundor-Lap complex, 8 to 15 percent slopes | 511 |
| 46C | Roy loam, 4 to 8 percent slopes..... | 145 |
| 46D | Roy loam, 8 to 15 percent slopes..... | 146 |
| 746E | Roy-Fergus complex, 15 to 35 percent slopes..... | 638 |
| 351E | Roy-Shawmut-Danvers complex, 15 to 35 percent slopes.... | 456 |
| 51UK3 | Rubble land-Arrowpeak-Sebud families, complex, steep ridges and mountain slopes | 186 |
| 31UK4 | Rubble land-Rock outcrop-Crawfish family, complex, cirque headwalls | 107 |
| 913E | Rubick gravelly sandy loam, 8 to 30 percent slopes | 678 |
| 369E | Rubick, bouldery-Comad, very bouldery, complex, 8 to 30 percent slopes..... | 468 |
| 731F | Rubick, stony-Worock complex, 20 to 50 percent slopes..... | 623 |
| 906E | Rubick, very stony-Tigeron, stony, complex, 15 to 45 percent slopes..... | 671 |
| 71GA4 | Rubick-Comad families-Rubble land complex, high relief mountain slopes and ridges | 227 |
| 712F | Rubick-Maurice complex, 20 to 50 percent slopes, very stony..... | 620 |
| 708D | Rubick-Moosejaw complex, 4 to 20 percent slopes | 619 |

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| 71GC4 | Rubick-Ovando families-Rock outcrop complex, high relief mountain slopes and ridges | 228 |
| 701E | Rubick-Stecum complex, 15 to 45 percent slopes | 614 |
| 738E | Rubick-Surdal complex, 15 to 35 percent slopes, very stony..... | 626 |
| 15NE2 | Rubycreek-Kloutch-Lilylake families, complex, weakly glaciated mountain slopes and ridges..... | 38 |
| 2681E | Sawbuck-Catgulch, stony, complex, 8 to 45 percent slopes..... | 827 |
| 1652E | Sawicki-Clasoil complex, 8 to 35 percent slopes, bouldery | 750 |
| 911E | Sebud, stony-Adel complex, 12 to 30 percent slopes | 675 |
| 904D | Sebud, stony-Redchief complex, 8 to 25 percent slopes | 668 |
| 2211F | Sebud, very stony-Arrowpeak family, very stony-Rock outcrop complex, 35 to 60 percent slopes | 795 |
| 2111E | Sebud, very stony-Hapgood family, complex, 8 to 45 percent slopes..... | 788 |
| 2212E | Sebud, very stony-Libeg, stony-Arrowpeak family, stony, complex, 15 to 35 percent slopes | 798 |
| 2212D | Sebud, very stony-Libeg-Arrowpeak family, stony, complex, 4 to 15 percent slopes..... | 796 |
| 150D | Sebud, very stony-Ratiopeak, stony-Bridger, stony, complex, 4 to 15 percent slopes | 390 |
| 2211E | Sebud-Arrowpeak family, stony, complex, 8 to 45 percent slopes..... | 793 |
| 118 | Sebud-Hapgood family, complex, 8 to 45 percent slopes | 374 |
| 119 | Sebud-Hapgood family-Rock outcrop complex, 25 to 60 percent slopes..... | 376 |
| 71NH2 | Sebud-Libeg families-Rock outcrop complex, high relief mountain slopes and ridges | 249 |
| 75UG3 | Sebud-Libeg families-Rock outcrop complex, low relief mountain slopes and ridges | 316 |
| 51UH2 | Sebud-Libeg-Marcetta families, complex, steep ridges and mountain slopes | 183 |
| 2112D | Sebud-Marcel complex, 4 to 25 percent slopes, bouldery | 790 |
| 71UH3 | Sebud-Marcetta-Libeg families, complex, high relief mountain slopes and ridges | 260 |
| 901E | Sebud-Poin-Tiban complex, 15 to 45 percent slopes, extremely stony | 665 |
| 908E | Sebud-Tiban-Ratiopeak complex, 12 to 30 percent slopes, stony..... | 673 |
| 1541E | Shaboom, bouldery-Lumpgulch, very bouldery-Rock outcrop complex, 8 to 35 percent slopes | 726 |
| 1543F | Shaboom, extremely bouldery-Kellygulch, extremely bouldery-Rock outcrop complex, 35 to 60 percent slopes | 730 |

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| 1540F | Shaboom, extremely bouldery-Rock outcrop-Elmark, very bouldery, association, 35 to 60 percent slopes | 724 |
| 2040F | Shaboom, extremely bouldery-Rock outcrop-Rubble land association, 35 to 70 percent slopes..... | 779 |
| 1543E | Shaboom, very bouldery-Kellygulch, very bouldery-Rock outcrop complex, 15 to 35 percent slopes | 728 |
| 151E | Shawmut cobbly loam, 15 to 35 percent slopes..... | 392 |
| 551F | Shawmut extremely bouldery loam, 8 to 50 percent slopes..... | 569 |
| 51E | Shawmut gravelly loam, 15 to 35 percent slopes..... | 157 |
| 51D | Shawmut gravelly loam, 8 to 15 percent slopes..... | 155 |
| 451E | Shawmut very bouldery loam, 8 to 25 percent slopes | 520 |
| 744Ej | Shawmut, bouldery-Shawmut, stony-Tolbert, bouldery, complex, 15 to 35 percent slopes | 634 |
| 745E | Shawmut, bouldery-Shawmut, very bouldery-Tolbert, bouldery, complex, 15 to 45 percent slopes, dry..... | 636 |
| 421B | Shewag-Shewag, moderately well drained complex, 1 to 4 percent slopes..... | 507 |
| 15GEE | Sig family-Rock outcrop-Roman family, complex, steep glaciated mountain slopes and ridges..... | 32 |
| 37GE3 | Sig family-Rock outcrop-Rubble land complex, moderately steep trough bottoms | 126 |
| 744E | Sigbird, very shallow-Sigbird-Surdal complex, 8 to 25 percent slopes..... | 632 |
| 35GE4 | Sig-Leighcan families-Rock outcrop complex, very steep trough walls | 115 |
| 319D | Silas, stony-Branham, stony-Tepete complex, 2 to 15 percent slopes..... | 439 |
| 616D | Silas-Vitroff complex, 2 to 15 percent slopes | 604 |
| 599E | Silverchief-Trapps complex, 15 to 35 percent slopes | 600 |
| 599F | Silverchief-Trapps complex, 35 to 60 percent slopes | 601 |
| 823E | Skaggs-Raynesford-Tropal, very stony, complex, 8 to 35 percent slopes..... | 657 |
| 825E | Skaggs-Whitore complex, 12 to 35 percent slopes, stony | 659 |
| 406E | Stecum, very bouldery-Comad-Rock outcrop complex, 8 to 30 percent slopes..... | 496 |
| 316F | Stecum, very bouldery-Rock outcrop-Zonite, very bouldery, complex, 20 to 50 percent slopes | 435 |
| 317E | Stecum-Caseypeak-Rock outcrop complex, 8 to 35 percent slopes..... | 437 |
| 415F | Stecum-Goldflint-Basin creek complex, 20 to 50 percent slopes, extremely stony..... | 499 |
| 335E | Stecum-Goldflint-Branham complex, 12 to 35 percent slopes..... | 450 |
| 315F | Stecum-Hiore complex, 20 to 50 percent slopes | 434 |

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| 333E | Stecum-Hiore-Rock outcrop complex, 15 to 35 percent slopes..... | 448 |
| 408E | Stecum-Mooseflat-Basin creek complex, 4 to 30 percent slopes, very bouldery | 497 |
| 366F | Stecum-Rock outcrop-Basin creek complex, 25 to 50 percent slopes..... | 466 |
| 371G | Stecum-Rock outcrop-Comad complex, 35 to 70 percent slopes..... | 471 |
| 365F | Stecum-Rock outcrop-Goldflint complex, 30 to 60 percent slopes..... | 465 |
| 328E | Stecum-Zonite-Basin creek complex, 8 to 45 percent slopes..... | 443 |
| 25B | Straw silty clay loam, 0 to 4 percent slopes | 98 |
| 703G | Surdal, very stony-Rubble land complex, 30 to 70 percent slopes..... | 617 |
| 1732F | Tepecreek, very bouldery-Casey peak, very bouldery-Rock outcrop complex, 35 to 60 percent slopes | 756 |
| 360B | Tepete mucky peat, 1 to 4 percent slopes..... | 458 |
| 363C | Tepete mucky peat, sandy substratum, 2 to 6 percent slopes..... | 462 |
| 635 | Tetonview loam, 0 to 4 percent slopes | 609 |
| 135 | Tiban very stony loam, 15 to 45 percent slopes..... | 382 |
| 1003E | Tiban, bouldery-Cheadle, very bouldery, complex, 15 to 35 percent slopes..... | 711 |
| 75CH3 | Tiban-Hanson-Levengood families, complex, low relief mountain slopes and ridges | 274 |
| 76E | Tibson gravelly loam, 15 to 35 percent slopes | 331 |
| 376E | Tibson very stony loam, 8 to 25 percent slopes..... | 475 |
| 943F | Tigeron family, stony-Tigeron family, very stony, complex, 25 to 60 percent slopes..... | 680 |
| 944E | Tigeron family, very bouldery-Redfern, bouldery-Rock outcrop complex, 15 to 45 percent slopes, warm..... | 682 |
| 945E | Tigeron family, very bouldery-Redfern, bouldery-Rock outcrop complex, 15 to 45 percent slopes, dry | 684 |
| 905E | Tigeron, stony-Rubick, very stony, complex, 15 to 45 percent slopes..... | 670 |
| 51VD2 | Tigeron-Garlet families-Rubble land complex, steep ridges and mountain slopes | 189 |
| 51UC2 | Tigeron-Garlet-Evaro families, complex, steep ridges and mountain slopes | 174 |
| 1675E | Tolbert, very stony-Blain creek, stony-Rock outcrop complex, 8 to 35 percent slopes | 755 |
| 543E | Tolbert-Brazil complex, 15 to 35 percent slopes | 561 |
| 2321E | Torpy gravelly loam, 15 to 35 percent slopes | 809 |
| 2321F | Torpy gravelly loam, 35 to 60 percent slopes | 810 |

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| 71LB3 | Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges | 232 |
| 71LC3 | Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges, moist | 234 |
| 71LD3 | Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges, cool | 236 |
| 98E | Trapps gravelly loam, 15 to 35 percent slopes | 366 |
| 98F | Trapps gravelly loam, 35 to 60 percent slopes | 367 |
| 198E | Trapps-Yreka complex, 8 to 25 percent slopes | 407 |
| 22LC2 | Vitroff-Figaro-Goosepeak families, complex, moderately steep soft volcanics | 87 |
| 22LD2 | Vitroff-Figaro-Goosepeak families, complex, moderately steep soft volcanics, moist | 89 |
| 2705F | Vitroff-Torpy complex, 35 to 60 percent slopes | 831 |
| 75LB2 | Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges | 303 |
| 75LC2 | Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges, moist..... | 305 |
| 75LD2 | Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges, cool..... | 307 |
| 497C | Waldbillig gravelly ashy loam, 2 to 8 percent slopes | 530 |
| 497E | Waldbillig gravelly ashy loam, 8 to 25 percent slopes | 531 |
| 37UD2 | Waldbillig-Bata families-Rock outcrop complex, moderately steep trough bottoms | 130 |
| 15ND3 | Waldbillig-Cowood-Lowder families, complex, steep glaciated mountain slopes and ridges..... | 35 |
| 797E | Waldbillig-Elve complex, 8 to 25 percent slopes | 650 |
| W | Water..... | 833 |
| 88E | Whitecow gravelly loam, 15 to 35 percent slopes | 345 |
| 88F | Whitecow gravelly loam, 35 to 60 percent slopes | 346 |
| 488E | Whitecow gravelly loam, cool, 15 to 35 percent slopes..... | 527 |
| 488F | Whitecow gravelly loam, cool, 35 to 60 percent slopes..... | 528 |
| 585E | Whitecow, bouldery-Shawmut, very bouldery-Rock outcrop complex, 15 to 45 percent slopes | 590 |
| 788F | Whitecow, cool-Rock outcrop complex, 35 to 60 percent slopes..... | 647 |
| 152 | Whitecow-Rock outcrop complex, 25 to 70 percent slopes..... | 393 |
| 988F | Whitecow-Rock outcrop complex, 35 to 60 percent slopes..... | 705 |
| 584F | Whitecow-Whitecow, stony-Warneke complex, 25 to 60 percent slopes..... | 588 |
| 71CAF | Whitecow-Windham-Repp families, complex, high relief mountain slopes and ridges | 216 |

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| 241F | Whitlash, very stony-Rock outcrop-Perma, very stony, complex, 25 to 60 percent slopes | 414 |
| 392E | Whitore cobbly loam, 15 to 35 percent slopes | 484 |
| 392Fd | Whitore cobbly loam, 35 to 60 percent slopes | 486 |
| 814E | Whitore complex, 12 to 45 percent slopes, stony..... | 654 |
| 71CC4 | Whitore family-Rock outcrop complex, high relief mountain slopes and ridges | 222 |
| 71CB4 | Whitore family-Rock outcrop-Tropal family, complex, high relief mountain slopes and ridges | 219 |
| 35CB4 | Whitore family-Rock outcrop-Tropal family, complex, very steep trough walls | 110 |
| 35CD4 | Whitore family-Rock outcrop-Tropal family, complex, very steep trough walls, cool..... | 111 |
| 51CC3 | Whitore family-Rubble land complex, steep ridges and mountain slopes | 149 |
| 92E | Whitore gravelly loam, 15 to 35 percent slopes | 351 |
| 92F | Whitore gravelly loam, 35 to 60 percent slopes | 352 |
| 492F | Whitore, dry-Rock outcrop complex, 35 to 60 percent slopes..... | 529 |
| 820E | Whitore, stony-Tropal, very stony-Raynesford, stony, complex, 12 to 45 percent slopes | 655 |
| 71CD3 | Whitore-Dryadine families-Rock outcrop complex, high relief mountain slopes and ridges | 224 |
| 71CA3 | Whitore-Hanson-Tropal families, complex, high relief mountain slopes and ridges | 214 |
| 155 | Whitore-Rock outcrop complex, 25 to 70 percent slopes..... | 394 |
| 992F | Whitore-Rock outcrop complex, 35 to 60 percent slopes..... | 706 |
| 51CD3 | Whitore-Rumsey families-Rubble land complex, steep ridges and mountain slopes | 150 |
| 31CE4 | Whitore-Tropal families-Rock outcrop complex, very steep cirques..... | 102 |
| 51CE2 | Whitore-Tropal families-Rubble land complex, steep ridges and mountain slopes | 152 |
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| 75VAF | Wildgen-Vision families-Rock outcrop complex, low relief mountain slopes and ridges | 323 |
| 42E | Windham gravelly loam, 15 to 35 percent slopes..... | 142 |
| 42F | Windham gravelly loam, 35 to 60 percent slopes..... | 144 |
| 204F | Windham, very stony-Maiden, very stony-Rock outcrop complex, 25 to 60 percent slopes | 412 |
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| 75GB2 | Windyridge-Como-Hiore families, complex, low relief mountain slopes and ridges | 284 |
| 71UAF | Winkler family-Rock outcrop complex, high relief mountain slopes and ridges | 252 |
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| 86F | Winkler gravelly loam, 35 to 60 percent slopes | 343 |
| 786E | Winkler gravelly loam, cool, 15 to 35 percent slopes | 645 |
| 786F | Winkler gravelly loam, cool, 35 to 60 percent slopes | 646 |
| 786D | Winkler gravelly loam, cool, 8 to 15 percent slopes | 644 |
| 75UAF | Winkler-Perma-Yreka families, complex, low relief mountain slopes and ridges | 309 |
| 886F | Winkler-Rubble land-Rock outcrop complex, 35 to 60 percent slopes | 664 |
| 71UCF | Winkler-Yreka families-Rock outcrop complex, high relief mountain slopes and ridges | 255 |
| 39E | Winspect gravelly loam, 15 to 35 percent slopes | 138 |
| 39F | Winspect gravelly loam, 35 to 60 percent slopes | 139 |
| 39D | Winspect gravelly loam, 8 to 15 percent slopes | 137 |
| 306E | Wissikihon-Branham-Highrye complex, 8 to 30 percent slopes | 426 |
| 2311F | Worock family, stony-Cowood family, very stony-Rock outcrop complex, 35 to 60 percent slopes | 805 |
| 2312F | Worock family, stony-Elve, stony-Rock outcrop complex, 35 to 60 percent slopes | 807 |
| 96E | Worock gravelly loam, cool, 15 to 35 percent slopes | 361 |
| 96F | Worock gravelly loam, cool, 35 to 60 percent slopes | 362 |
| 96D | Worock gravelly loam, cool, 8 to 15 percent slopes | 360 |
| 696E | Worock gravelly loam, dry, 15 to 35 percent slopes | 613 |
| 15VDE | Worock-Cowood families, complex, steep glaciated mountain slopes and ridges | 54 |
| 15VEE | Worock-Cowood-Finn families, complex, steep glaciated mountain slopes and ridges | 58 |
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| 296E | Worock-Elve-Whitore complex, 15 to 35 percent slopes | 417 |
| 71UDB | Worock-Evaro-Elvick families, complex, nivalational mountain slopes and ridges | 258 |
| 75UC2 | Worock-Garlet-Elve families, complex, low relief mountain slopes and ridges | 312 |
| 596E | Worock-Loberg complex, 15 to 35 percent slopes | 595 |
| 596D | Worock-Loberg complex, 8 to 15 percent slopes | 594 |

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| 95F | Yreka gravelly loam, 35 to 60 percent slopes | 358 |
| 195E | Yreka gravelly loam, cool, 15 to 35 percent slopes..... | 405 |
| 195F | Yreka gravelly loam, cool, 35 to 60 percent slopes..... | 406 |
| 75UCF | Yreka-Winkler families-Rock outcrop complex, low relief mountain slopes and ridges | 315 |
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Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, ranchers, foresters, and agronomists can use the surveys to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use the surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the surveys to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrsc>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each map unit is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.



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Soil Survey of Deerlodge National Forest Area, Montana

By Dave Rupert, Project Leader

Fieldwork by Dave Rupert, Forest Service

Editor, Mary E. Martinec, Natural Resources Conservation Service

United States Department of Agriculture, Forest Service, in cooperation with United States Department of Agriculture, Natural Resources Conservation Service

DEERLODGE NATIONAL FOREST AREA is located in southwestern Montana (fig. 1). The survey area includes 1,184,000 acres, or about 1,850 square miles. Lands of the former Deerlodge National Forest (now part of the Beaverhead-Deerlodge National Forest) cover a large part of southwestern Montana in the counties of Deer Lodge, Granite, Jefferson, Madison, Powell, and Silver Bow.

General Nature of the Survey Area

This section describes some of the environmental and cultural features that affect the use and management of soils in the survey area. These features are history and development, geology, and climate.

History and Development

Michael Garverich, Montana State Geologist, NRCS, prepared this section.

The Deerlodge National Forest gets its name from a thermal spring deposit (fig. 2) located at Warm Springs. This travertine deposit is shaped like a lodge, and deer were noted to congregate in the vicinity, hence the name. The mound is higher than the surrounding vegetation and was once a well-known landmark. This curiosity remains an interesting feature but is somewhat hidden from view behind the buildings at Warm Springs. Decaying structures near the mound attest to early attempts to harness its geothermal energy.

The history of this area is dominated by two features—the topography and the world-class mineral deposits of Butte. Topography produced the first human impacts to the area because of a low and easily accessible pass over the Continental Divide, and the mineral deposits of Butte have provided a long-lasting economic input to the region.

The topography of the intermountain basins provided for an easily approachable and negotiable pass, Deer Lodge Pass, through the mountains. This pass attracted early Native Americans who used it to travel through the mountains in their seasonal journeys. Knowledge of the pass was conveyed to the earliest fur trappers who used it as a convenient route between the trading posts of northwestern Montana and the beaver streams of Idaho, Utah, and Wyoming. The traders and trappers were followed in turn by early ranching entrepreneurs and prospectors. Whereas the Native Americans and trappers left little evidence of their passing, the impact of the ranchers, miners, and subsequent loggers left a lasting impression.

Soil Survey of Deerlodge National Forest Area, Montana

Figure credit: Robert Spokas, Montana Soil Data Quality Specialist, NRCS

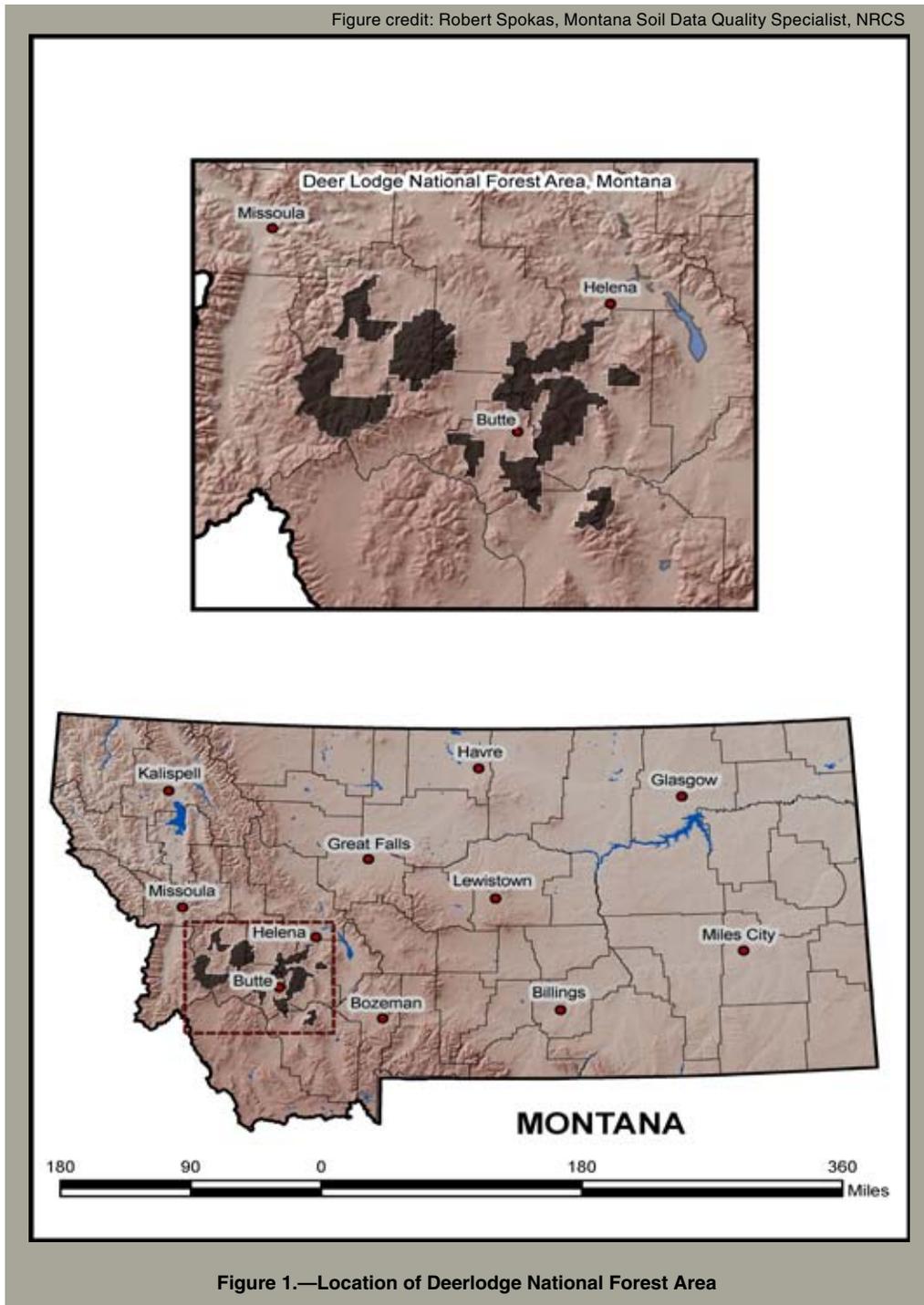


Figure 1.—Location of Deerlodge National Forest Area

The Lewis and Clark Corps of Discovery was the first recorded passage through the area of the Deerlodge National Forest. The Corps proceeded through the Jefferson River Valley north and west of the Tobacco Root Mountains and traveled on to the southwest to meet with the Nez Perce west of Lemhi Pass. In their explorations, the Corps did not directly visit the forestlands of the mountains on either side of the valleys.

Following the Corps of Discovery, this area was left to the Native Americans except for occasional trapping and trading parties traveling through the country, until early

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Photo credit: Michael Garverich, Montana State Geologist, NRCS

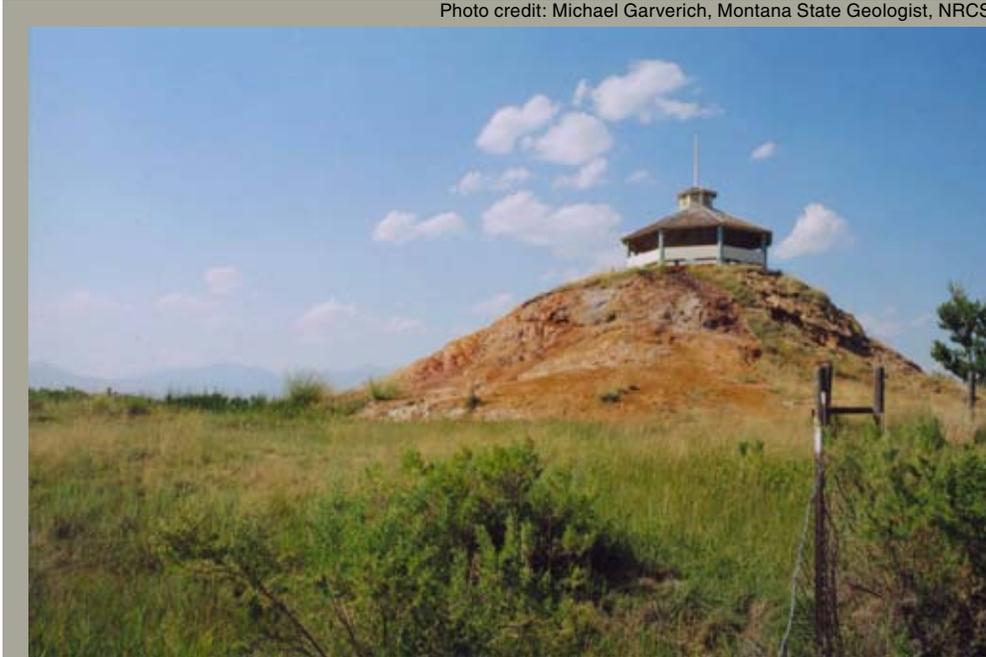


Figure 2.—“The Deer Lodge” from which Deerlodge National Forest takes its name

ranchers recognized that the valleys would be good stock ranges for worn trail stock from the Oregon and California Trails to the south. In the late 1850s, farmers and ranchers began moving into the Deer Lodge Valley; one of the first was Granville Stuart, a noted rancher, miner, and historian of Montana. The towns of Deer Lodge and Gold Creek were established at this time to serve the agricultural community and travelers.

Granville Stuart is credited with making the first significant find of gold in Montana at Gold Creek in about 1860. This discovery led to a huge influx of prospectors and miners into the area. These pioneers left a lasting impact on the area that would become the Deerlodge National Forest in the form of roads and trails, placer and hard rock diggings, ghost towns, and extensive logging activities.

Resource development activities brought with it the trappings of civilization in the form of towns and transportation infrastructure. Butte, the major city of the region, had its foundations in the discovery of placer gold along Silver Bow Creek in Summit Valley in the late 1860s. This find led to the eventual discovery of the silver-rich veins of Butte Hill, followed by the discovery and development of the great copper bonanza below the silver zone. Development of these great mineral deposits led to the establishment of Butte as the largest population center between Spokane and Minneapolis-Saint Paul and north of Salt Lake City during the period from about 1890 to 1930. The economic, social, and political impacts of this development linger on to the present. With the initial closure of the Butte mines in 1980, the region suffered a major economic downturn, which lingers on today despite renewed surface mining and diversification into other industries.

The presence of Deer Lodge Pass prompted the early establishment of north-south trails through the area, first by Native Americans, then by trappers and traders, then by ranchers and prospectors. These early trails were quickly followed by roads and, in 1881, by the Utah Northern Railroad to serve Butte and vicinity. Additional railroads were brought into the area until Butte and vicinity were served by four rail lines. With the closure of the mines in 1980, rail traffic decreased; only one railroad serves Butte at this time. Meanwhile, the area was served by a network of roads developed from

Soil Survey of Deerlodge National Forest Area, Montana

early trails and from rugged passes, such as Pipestone and Woodville Hill, so that the region became the center of a north-south and east-west road network. This network continues today as the interstate highway system has a major crossroads at Butte.

The region hosts Montana Tech of The University of Montana, a leading minerals engineering school, the Montana State Prison near Deer Lodge, the Montana State Hospital at Warm Springs and Galen, a major high-purity silicon plant near Ramsay, and the Continental Pit copper and molybdenum mine of Montana Resources Inc. (MRI). The legacy of historic mining and milling practices lives on in the nation's largest U.S. Environmental Protection Agency (EPA) Superfund site along the upper reaches of the Clark Fork River and the Berkley Pit. The region also contains the largest copper resource in the United States as well as very large reserves of silver, lead, zinc, and manganese—resources for future generations.

During early development of the mines and smelters at Butte and Anaconda, the forestlands of the Deerlodge National Forest, and other forests of the region, provided huge quantities of wood for mine-support timbers and cordwood for boiler and smelter fuel. The area around Butte were nearly clear-cut as shown by old, decaying stumps found throughout the mountains. Over time, the introduction of more efficient fuels (coal, electricity, and natural gas) and improved mining technology (rock bolts instead of timber), greatly reduced the demand for timber. The forest also provided timber for sawmills. Although the forests have largely regrown today, only one medium-sized sawmill at Deer Lodge and a small sawmill at Butte remain. Forest use today is nearly limited to recreational opportunities and water runoff to streams and lakes that provide water for domestic, agricultural, and industrial purposes. There is a small amount of mineral exploration in progress, and there is some livestock grazing taking places.

Geology

Michael Garverich, Montana State Geologist, NRCS, prepared this section.

The area covered by the soil survey is mostly mountainous terrain and occurs around Mount Fleecer and in the Tobacco Root, Bull, Highland, Lowland, Elkhorn, Flint Creek, Anaconda, and Pioneer Mountains. These ranges are generally cored by igneous intrusive rocks with lesser amounts of extrusive rocks. The Tobacco Root Mountains have extensive exposures of high-grade regional metamorphic rocks. Sediments of Paleozoic and Mesozoic age commonly underlie foothill areas. Tertiary sediments underlie intervening valleys.

Tertiary sediments occur in the valleys of the region with a few small areas extending into forestlands. These sediments are generally basin fill that are poorly cemented and light colored and consist of sands and gravels with more or less clay. Small amounts of limestones deposited in lacustrine and/or spring environments may be present locally. These deposits were formed during extensional events, which formed the basins now occupied by the valleys. Significant amounts of Pleistocene glacial deposits (till) are found in and near those valleys that have been glaciated. Most valleys also contain narrow bands of recent alluvium under their flood plains. These rocks generally produce loamy to clayey soils with local areas of stony to skeletal soils over gravelly sections.

Tertiary volcanic rocks are found in the Bull, Elkhorn, and Lowland Mountains. These rocks are mostly Elkhorn Mountain Volcanics, extrusive equivalents of the plutonic rocks of the Boulder Batholith. Lower portions of these rocks are as old as Cretaceous in age. Lowland Creek Volcanics found in the area north of Butte are slightly younger. Both of these volcanic rock units are mostly rhyodacitic to rhyolitic in composition. These volcanic rock units contain lava flows, welded tuffs, mudflows, and local sedimentary beds. Mesozoic igneous rocks are generally combined with Tertiary

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igneous rocks as igneous activity began in Cretaceous time and continued into Tertiary time. Volcanic rocks include the extensive Elk Horn Mountain Volcanics that grade eastward into the Late Cretaceous-Paleocene sediments of the Livingston Group rocks of the Cretaceous-Paleocene seaway and the younger Lowland Creek Volcanics. Equivalent plutonic rocks include the Boulder Batholith, Tobacco Root Batholith, and intrusive igneous rocks of the Pioneer and Flint Creek Ranges. Hydrothermal activity associated with these igneous rocks is responsible for many mineral deposits throughout the area, including the Butte ore deposits and many others near Boulder, Helena, Melrose, Montana City, Philipsburg, Silver Star, and Whitehall. Plutonic rocks generally produce sandy to loamy soils with some stony to skeletal soils over volcanic rocks. These units are resistant to erosion in today's climate, so outcrop and shallow soils are also common.

Mesozoic (Triassic, Jurassic, and Cretaceous) age sedimentary rocks are found in the lower foothill areas of most of the ranges in the area. Typically, these rocks are strongly deformed by faulting and folding and are locally metamorphosed by later igneous intrusives. Unless metamorphosed, these rocks are commonly soft and poorly cemented sandstones and shales. These rocks generally produce loamy to clayey soils with local areas of stony to skeletal soils near resistant ledges.

Paleozoic rocks are represented by a thick sequence of sediments that began forming in late-middle Cambrian with the deposition of the Flathead Sandstone (locally quartzite), a distinctive basal sandstone unit deposited on the older basement of high-grade metamorphic rocks (gneiss and schist), and the lightly metamorphosed Belt rocks of Proterozoic age. Carbonates (limestones and dolomites), shales, and sandstones are all represented in the Paleozoic section, but the dominant visual impact comes from the carbonates and sandstones, lithologies that are resistant to erosion in the present climate of the Deerlodge National Forest. These lithologies tend to be ridge-forming units, are commonly tree-covered, and commonly result in outcrop, skeletal, or stony soils. Shales or units with high, interbedded shale content are usually valley-forming units with deep, loamy soils. Many thicker shale units are covered by landslide deposits. These rocks are commonly intensely folded and faulted (structures), and portions of the Paleozoic section are commonly missing at any one location because of structural deformation.

Proterozoic Rocks are represented by lightly metamorphosed rocks of the Belt Supergroup, a regionally extensive and thick sequence of sedimentary rocks. Lithologies include quartzites, siltites, argillites, and carbonates. Some of the quartzites and carbonates are resistant units and tend to be covered by stony to skeletal soils with some shallow soils and outcrop. Argillites tend to produce loamy soils. Belt rocks tend to be red or green; these colors are commonly reflected in the color of the soils.

Limited amounts of "metamorphosed basement" rocks are present, mostly in the Tobacco Root Mountains and the Flint Creek Range. These rocks are highly metamorphosed and likely started as sediments and volcanic rocks. Very deep burial and high temperatures and pressures have recrystallized the rocks into coarsely crystallized gneisses, schists, and amphibolites. These rocks are generally resistant and produce shallow soils and outcrop. Soils tend to be coarse grained and stony or skeletal. Soils derived from schists are more likely to be loamy.

Numerous structures (faults and folds) are found throughout the area of the Deerlodge National Forest. These faults and folds range from active faults along range fronts, such as the west side of the Tobacco Root Mountains, to long inactive thrust faults and folds associated with the Sevier Orogeny of Cretaceous to Tertiary Age. Faults are commonly areas of deeper soils, even where they cut through resistant rocks. Folds do not directly affect the development of soils but affect the outcrop width and sinuosity of the various rocks and the distribution pattern of the derived soils.

Climate

Michael J. Hansen, Montana Assistant State Soil Scientist, NRCS, prepared this section.

The survey area has a continental climate. Temperatures vary widely on a daily and seasonal basis with recorded air temperatures ranging from -60 to near 100 degrees. Average annual precipitation ranges from a low of about 10 inches in intermountain valleys to more than 45 inches in alpine areas.

The majority of precipitation is received from Pacific air masses, with some additional moisture from arctic and gulf coast air masses. The arctic air masses often interrupt normal airflow and produce below zero temperatures during winter. The local mountain climate is highly variable, depending on slope, aspect, elevation, and the rain shadow effects produced by the mountains. South-facing, grassy slopes can have little snow cover and relatively warm average temperatures. Windswept ridges can be extremely cold and have little snow cover. Snow on north-facing slopes in the higher elevations can persist well into early summer. Frost pockets are in low areas where cold air accumulates at night during summer.

The climate data included and referenced with URL links are from SNOTEL sites located in the illustration (fig. 3) and listed in the provided “Precipitation” table. These SNOTEL sites are within the Deerlodge National Forest or on nearby representative landscapes. To obtain full resolution precipitation, snowfall and temperature data, including available summaries, access the Montana SNOTEL historic data at <http://www.mt.nrcs.usda.gov/snow/data/historic.html>.

The “Precipitation” table provides a monthly precipitation summary for the survey area as recorded at the associated listed SNOTEL sites in the period 1971 to 2000. Access detailed precipitation data, by water year (October 1 to September 30), for individual SNOTEL sites at <http://www.wcc.nrcs.usda.gov/cgibin/state-site.pl?state=MT&report=preciptablehist>.

Precipitation for Located SNOTEL Sites

| SNOTEL SITE NAME | ELEV (FT) | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| BASIN CREEK | 7,180 | 1.5 | 1.5 | 1.4 | 1.2 | 1.2 | 2.5 | 2.9 | 4.3 | 3 | 1.6 | 1.6 | 1.8 | 24.5 |
| BLACK PINE | 7,210 | 1.8 | 2.3 | 2.8 | 3.0 | 2.3 | 2.7 | 2.9 | 3.1 | 2.5 | 1.3 | 1.7 | 1.6 | 28.0 |
| COMBINATION | 5,600 | 1.2 | 1.7 | 1.9 | 1.7 | 1.4 | 1.6 | 2 | 2.7 | 2.5 | 1.4 | 1.7 | 1.6 | 21.4 |
| FROHNER MEADOW | 6,480 | 1.9 | 1.8 | 2.0 | 1.9 | 1.5 | 2.1 | 2.3 | 3.3 | 2.7 | 1.8 | 1.8 | 2.0 | 25.1 |
| LOWER TWIN | 7,900 | 3.0 | 3.9 | 3.6 | 3.3 | 2.8 | 4.1 | 4.8 | 5.6 | 4.5 | 2.4 | 2 | 2.3 | 42.3 |
| PETERSON MEADOWS | 7,200 | 1.7 | 1.8 | 1.9 | 2.0 | 1.7 | 2.8 | 3.4 | 4.0 | 3.2 | 1.5 | 1.9 | 1.8 | 27.7 |
| ROCKER PEAK | 8,000 | 1.9 | 2.4 | 2.8 | 2.7 | 2.2 | 3.2 | 3.5 | 4.0 | 3.1 | 1.9 | 2.0 | 2.1 | 31.8 |
| SKALKAHO SUMMIT | 7,250 | 2.4 | 3.9 | 4.9 | 5.1 | 4.2 | 4.1 | 3.3 | 3.5 | 3.1 | 1.9 | 1.7 | 2.0 | 40.1 |
| TIZER BASIN | 6,840 | 2.1 | 2.0 | 2.2 | 1.7 | 1.4 | 2.4 | 3.1 | 3.6 | 3.8 | 2.7 | 2.3 | 1.6 | 28.9 |
| WARM SPRINGS | 7,800 | 3.0 | 4.3 | 4.3 | 4.1 | 3.5 | 4.2 | 4.3 | 5.0 | 3.8 | 2.2 | 2.3 | 2.7 | 43.7 |

The average frost-free season ranges from about 100 days in the valleys to less than 20 days in alpine areas. Access detailed temperature data, by water year (October 1 to September 30), for individual SNOTEL sites at <http://www.wcc.nrcs.usda.gov/cgibin/temperature-table.pl?state=MT&report=historical>.

Spring is dominantly cool and wet. Precipitation is highest in late May and early June. Snowstorms can occur at any time at the higher elevations.

Summer is warm and relatively dry. Cloudy days are infrequent. High-intensity thunderstorms of short duration occur frequently throughout the summer. Several inches of snow can fall in June and August.

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Autumn is dry and cool. The first significant fall snow typically comes in September; however, autumn weather can last through November. Soils not covered by snow are generally frozen by late October.

In winter, the temperature is relatively cold, and most precipitation falls as snow.

For the SNOTEL sites listed, an average of 42 percent of annual precipitation falls during May through September.

The relative humidity average is generally low. In midafternoon, the relative humidity is about 50 percent. Humidity is higher at night, averaging about 80 percent at dawn. The sun shines about 70 percent of the time in summer and about 40 percent in winter. The prevailing wind is from the south-southwest. Average wind speed is highest in April. Relative humidity, percent sunshine, and wind information are estimated from the First Order station at Idaho Falls, Idaho, and various climate atlases.

General SNOTEL data and summary access

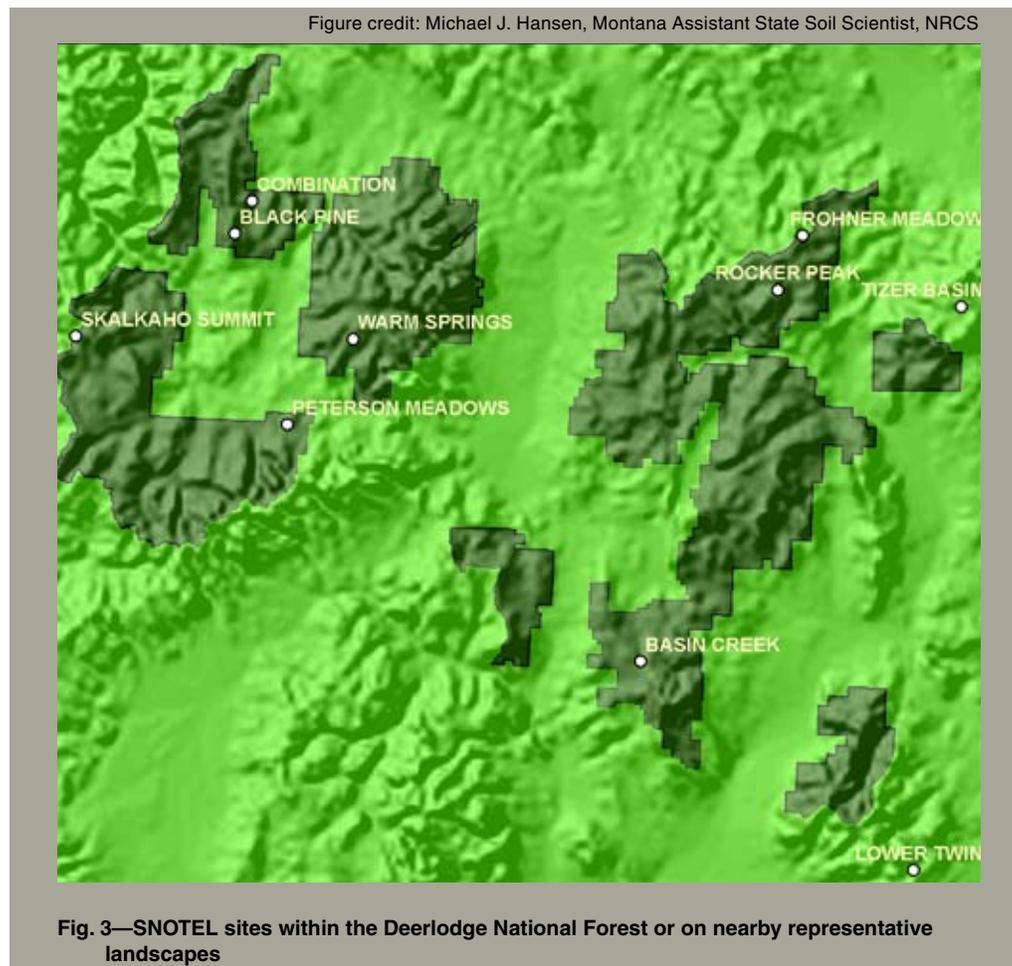
<http://www.mt.nrcs.usda.gov/snow/data/historic.html>

SNOTEL Water Year Temperature summaries (water year as 2-digit year code in year header, 88 for 1988 for example, ordered oldest to present)

<http://www.wcc.nrcs.usda.gov/cgibin/temperature-table.pl?state=MT&report=historical>

SNOTEL Water Year Precipitation summaries (water year as 2-digit year code in year header, 88 for 1988 for example, ordered oldest to present)

<http://www.wcc.nrcs.usda.gov/cgibin/state-site.pl?state=MT&report=precipitablehist>



How This Survey Was Made

This soil survey inventory was conducted to provide information about the soils and miscellaneous areas in the survey area. The results include a description and location of the soils and miscellaneous areas, including information on their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; general pattern of drainage; native vegetation; and kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends up to 2 meters deep from the surface down into the unconsolidated material in which the soil formed.

The soils and miscellaneous areas in the survey area are in a pattern related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular landform or segment of a landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific landform segments, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape transition to another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to record boundaries.

Soil scientists recorded the characteristics of the soil profiles studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts reflecting meaningful partitions of the soil/landscape continuum. As a result, each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they related them to similar soils in the same taxonomic class in other areas that best support the resulting data and interpretations.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods, but they are less predictable year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs, used in combination with digital orthophotographic imagery (black and white, color, and color infrared), show trees, buildings, roads, and rivers, all of which help in locating boundaries accurately.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous area components in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major soil components or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class, there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soil components or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soil components.

Some minor components have properties similar to those dominant in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They are not mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the mapping scale. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and, consequently, they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all of the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soil components and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and provides information contrasting the soil components, where they are found in the map unit, and component properties important to the use and management.

Soils that have profiles that are nearly alike make up a soil series. All the soils of a series have major horizons that are similar in Composition, thickness, and arrangement. The soils of a given series can differ in surface layer texture, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is partitioned into soil phases. Most of

the soil components represented in detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Ratiopeak, very cobbly loam on 20 to 35 percent slopes with a very stony surface cover is a phase of the Ratiopeak series.

Some map units are made up of two or more major soil components or miscellaneous areas. These map units types are complexes, associations, or undifferentiated groups.

This survey includes complexes. They consist of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Kilgore-Danielvil complex, 2 to 8 percent slopes is an example of a soil complex.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Brickner, very bouldery-Rock outcrop-Tolbert, very bouldery, association, 25 to 60 percent slopes is an example of an association.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Water is an example.

The "Acreage and Proportionate Extent of the Soils" table gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils.

2A—Dougcliff mucky peat, 0 to 2 percent slopes, ponded

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 5,800

Mean annual precipitation: 10 to 19 inches

Frost-free period: 70 to 105 days

Component Description

Dougcliff and similar soils

Composition: 85 percent

Taxonomic class: Euic, frigid Fluvaquentic Haplofibrists

Landform: Depressions

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Organic material

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 20.2 inches

Typical profile:

Oi1—0 to 8 inches; mucky peat

Oi2—8 to 32 inches; mucky peat

2C—32 to 36 inches; silty clay loam

3Oi3—36 to 60 inches; mucky peat

Additional Components

Flintcreek and similar soils: 8 percent

Nythar and similar soils: 7 percent

Management Considerations

Dougcliff

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Flintcreek

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nythar

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

3B—Foolhen loam, 0 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 6,500

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Foolhen and similar soils

Composition: 85 percent

Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls

Landform: Flood plains

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium

Flooding: None

Water table: Present

Ponding duration: Brief

Available water capacity to 60-inch depth: Approximately 8.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 9 inches; loam

Bg—9 to 20 inches; sandy loam

Cg1—20 to 27 inches; sandy loam
Cg2—27 to 60 inches; gravelly loam

Additional Components

Mooseflat and similar soils: 6 percent
Finn and similar soils: 5 percent
Dunkleber and similar soils: 4 percent

Management Considerations

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Finn

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

15CD3—Garlet-Tropal-Whitore families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, very stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

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Surface layer texture: Gravelly sandy loam
Rock fragments on the soil surface: 0.10 to 3.00 percent stones
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Drift derived from limestone, sandstone, and shale
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.9 inches
Typical profile:
E1—0 to 4 inches; gravelly sandy loam
E2—4 to 19 inches; very channery sandy loam
Bw—19 to 46 inches; very cobbly sandy clay loam
Bk—46 to 70 inches; extremely cobbly loam

Tropal, very stony and similar soils

Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocrypts
Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent
Native plant cover type: Forestland
Habitat type(s):

- Douglas-fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Stony loam
Rock fragments on the soil surface: 0.10 to 3.00 percent stones, limestone, unspecified
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.1 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
A—1 to 4 inches; stony loam
Bk1—4 to 13 inches; extremely gravelly loam
Bk2—13 to 18 inches; extremely gravelly loam
R—18 to 60 inches; bedrock

Whitore, very stony and similar soils

Composition: 15 percent
Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts
Landform:

- backslope on ground moraines
- footslope on ground moraines

Slope: 25 to 50 percent
Native plant cover type: Forestland
Habitat type(s):

- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Channery loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; channery loam

Bk—8 to 60 inches; extremely cobbly loam

Additional Components

Dryadine and similar soils: 10 percent

Waldbillig and similar soils: 10 percent

Finn and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Garlet, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tropal, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitore, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Dryadine

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

15CE3—Dryadine-Whitore-Tropal families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Dryadine and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- mountain slopes
- shoulder on ridges
- summit on ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir

Surface layer texture: Flaggy silt loam

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Volcanic ash over colluvium and/or residuum weathered from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

- A—0 to 3 inches; flaggy silt loam
- Bw—3 to 12 inches; extremely flaggy silt loam
- Bk—12 to 34 inches; extremely flaggy silt loam
- R—34 to 60 inches; bedrock

Whitore, extremely bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- backslope on ground moraines
- shoulder on ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Channery loam

Rock fragments on the soil surface: 3 to 15 percent boulders, limestone, unspecified

Depth to restrictive feature: None noted

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Drainage class: Well drained

Parent material: Drift derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; channery loam

Bk—8 to 60 inches; extremely cobbly loam

Tropal, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocrypts

Landform:

- mountain slopes
- shoulder on ridges
- summit on ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, limestone, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; stony loam

Bk1—4 to 13 inches; extremely gravelly loam

Bk2—13 to 18 inches; extremely gravelly loam

R—18 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Rumsey and similar soils: 10 percent

Finn and similar soils: 5 percent

Management Considerations

Dryadine

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitore, extremely bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tropal, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

15GC3—Ovando-Rubick-Caseypeak families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 55 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower-pinegrass phase

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam

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E2—5 to 11 inches; very bouldery loamy coarse sand

E and Bt—11 to 60 inches; very bouldery loamy sand

Rubick, extremely bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower-pinegrass phase

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

E1—0 to 3 inches; cobbly coarse sandy loam

E2—3 to 8 inches; very cobbly coarse sandy loam

Bw—8 to 27 inches; very stony coarse sandy loam

BC—27 to 60 inches; extremely stony loamy coarse sand

Caseypeak, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 6 inches; very cobbly coarse sandy loam

Bw—6 to 17 inches; very gravelly coarse sandy loam

Cr—17 to 20 inches; bedrock

R—20 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Management Considerations

Ovando, extremely bouldery

- Steep slopes
- Erodible surface

- Cutslope slumping
 - Cutslope erosion
- Rubick, extremely bouldery
- Steep slopes
 - Erodible surface
- Caseypeak, very stony
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

15GD2—Ovando-Petty-Littlesalmon families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- shoulder on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam
- E2—5 to 11 inches; very bouldery loamy coarse sand
- E and Bt—11 to 60 inches; very bouldery loamy sand

Petty and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform:

- toeslope on ground moraines
- footslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.5 inches

Typical profile:

- Bw—0 to 8 inches; bouldery ashy loam
- 2E—8 to 18 inches; very gravelly coarse sandy loam
- 2E and Bt—18 to 32 inches; very gravelly coarse sandy loam
- 2C—32 to 60 inches; very gravelly loamy coarse sand

Littlesalmon and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts

Landform:

- backslope on ground moraines
- footslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 11 inches; very bouldery ashy loam
- 2Bw—11 to 21 inches; very gravelly sandy loam
- 2C—21 to 60 inches; very gravelly loamy coarse sand

Additional Components

Caseypeak, very stony and similar soils: 10 percent

Finn and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Ovando, extremely bouldery

- Cutslope slumping
- Cutslope erosion

Petty

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Little Salmon

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Caseypeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

15GD3—Ovando-Blacklead families-Rock outcrop complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

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Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam
- E2—5 to 11 inches; very bouldery loamy coarse sand
- E and Bt—11 to 60 inches; very bouldery loamy sand

Blackled and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Drift over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- A—0 to 4 inches; gravelly sandy loam
- A&Bw1—4 to 14 inches; very gravelly sandy loam
- A&Bw2—14 to 41 inches; extremely gravelly sandy loam
- R—41 to 60 inches; bedrock

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Caseypeak, extremely stony and similar soils: 10 percent

Littlesalmon and similar soils: 10 percent

Management Considerations

Ovando, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Blacklead

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Caseypeak, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Littlesalmon

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

15GDE—Ovando-Littlesalmon-Bata families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 34 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- shoulder on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam
- E2—5 to 11 inches; very bouldery loamy coarse sand
- E and Bt—11 to 60 inches; very bouldery loamy sand

Little Salmon and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts

Landform:

- backslope on ground moraines
- footslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Very bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 11 inches; very bouldery ashy loam
- 2Bw—11 to 21 inches; very gravelly sandy loam
- 2C—21 to 60 inches; very gravelly loamy coarse sand

Bata, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform:

- footslope on ground moraines
- toeslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

Bw—3 to 12 inches; gravelly ashy silt loam

2E/Bt—12 to 23 inches; very gravelly sandy loam

2Bt—23 to 60 inches; very gravelly sandy clay loam

Additional Components

Caseypeak, extremely stony and similar soils: 10 percent

Lowder and similar soils: 10 percent

Rock outcrop: 10 percent

Cryohemists and similar soils: 5 percent

Management Considerations

Ovando, extremely bouldery

- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Littlesalmon

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Caseypeak, extremely stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Cryohemists

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

15GE2—Ovando-Jeru-Roman families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Ovando and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- backslope on ground moraines
- shoulder on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over colluvium and/or till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- E1—0 to 5 inches; very bouldery sandy loam
- E2—5 to 20 inches; very gravelly sandy loam
- E and Bt—20 to 60 inches; very cobbly loamy sand

Jeru, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- shoulder on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

- A—0 to 4 inches; very cobbly ashy loam
- Bw—4 to 32 inches; very cobbly sandy loam
- BC—32 to 60 inches; very cobbly sandy loam

Roman and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Andic Dystricrypts

Landform: Moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- A—0 to 9 inches; very bouldery ashy loam
- 2Bw—9 to 19 inches; very gravelly sandy loam
- 2C—19 to 60 inches; very gravelly loamy coarse sand

Additional Components

Finn and similar soils: 10 percent

Rock outcrop: 10 percent

Sig and similar soils: 10 percent

Management Considerations

Ovando

- Surface boulders
- Cutslope slumping
- Cutslope erosion

Jeru, very bouldery

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Roman

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Finn

- Flooding
- High water table

- High windthrow hazard
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material
- Sig
- Shallow soil
 - Low bearing strength

15GE3—Roman-Crawfish families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Forestland
Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,590 to 7,970

Mean annual precipitation: 30 to 39 inches

Frost-free period: 30 to 50 days

Note: This landform consists of 1st to 3rd order intermittent or perennial streams. Most drainage channels are poorly integrated with others and are weakly incised.

Component Description

Roman, extremely bouldery and similar soils

Composition: 55 percent

Taxonomic class: Sandy-skeletal, mixed Andic Dystrocryepts

Landform: Weakly glaciated mountain slopes

Slope: 10 to 45 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush-grouse whortleberry phase
- subalpine fir/beargrass-grouse whortleberry phase

Surface layer texture: Bouldery ashy loam

Rock fragments on the soil surface: 2 to 10 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over till derived from granite and gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

Oe—0 to 1 inches; moderately decomposed plant material

E—1 to 2 inches; bouldery ashy loam

Bw—2 to 9 inches; bouldery ashy loam

2BC—9 to 19 inches; very gravelly sandy loam

2C—19 to 60 inches; very gravelly loamy coarse sand

Crawfish, extremely bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Humicryepts

Landform: Weakly glaciated ridges

Slope: 10 to 45 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass-grouse whortleberry phase
- subalpine fir/smooth woodrush-grouse whortleberry phase

Surface layer texture: Very bouldery sandy loam

Rock fragments on the soil surface: 5 to 15 percent boulders, granite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Till over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.8 inches

Typical profile:

- Oe—0 to 1 inches; moderately decomposed plant material
- A—1 to 5 inches; very bouldery sandy loam
- Bw—5 to 10 inches; very bouldery sandy loam
- C—10 to 14 inches; very bouldery sandy loam
- R—14 to 60 inches; bedrock

Additional Components

Lilylake and similar soils: 0 to 7 percent

Rubycreek, rubbly and similar soils: 0 to 10 percent

Rock outcrop: 0 to 10 percent

Rubble land: 0 to 5 percent

Management Considerations

Roman, extremely bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Crawfish, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Lilylake

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Rubycreek, rubbly

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

15GEE—Sig family-Rock outcrop-Roman family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,120 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Sig and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Landform:

- shoulder on ground moraines
- summit on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir

Surface layer texture: Very stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Drift over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 5 inches; very stony loam
- Bw—5 to 15 inches; very cobbly sandy loam
- R—15 to 60 inches; bedrock

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Roman and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Andic Dystricrypts

Landform: Moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A—0 to 9 inches; very bouldery ashy loam

2Bw—9 to 19 inches; very gravelly sandy loam

2C—19 to 60 inches; very gravelly loamy coarse sand

Additional Components

Finn and similar soils: 10 percent

Bata, very stony and similar soils: 5 percent

Jeru, extremely bouldery and similar soils: 5 percent

Management Considerations

Sig

- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

Roman

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Jeru, extremely bouldery

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

15GH3—Libeg-Opitz-Copenhaver families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 5 inches; loam

Bt1—5 to 15 inches; gravelly loam

Bt2—15 to 35 inches; very cobbly sandy clay loam

BC—35 to 60 inches; extremely cobbly sandy clay loam

Opitz and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Landform:

- ground moraines
- ridges

Slope: 25 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Drift over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

A—0 to 10 inches; sandy loam

Bt1—10 to 15 inches; gravelly sandy clay loam

Bt2—15 to 22 inches; gravelly sandy loam

BC—22 to 36 inches; gravelly loamy coarse sand

Cr—36 to 57 inches; bedrock

R—57 to 60 inches; bedrock

Copenhaver and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- shoulder on ground moraines
- summit on ground moraines

Slope: 25 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Drift over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 5 inches; gravelly loam
- Bt—5 to 14 inches; very gravelly clay loam
- R—14 to 60 inches; bedrock

Additional Components

Marcetta and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Libeg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Opitz

- Steep slopes
- Erodible surface
- Low bearing strength

Copenhaver

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Marcetta

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

15ND3—Waldbillig-Cowood-Lowder families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Waldbillig, very stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, orthoquartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy silt loam

2E—12 to 28 inches; very gravelly fine sandy loam

2E&Bt—28 to 60 inches; very gravelly sandy loam

Cowood, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, orthoquartzite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

E—0 to 4 inches; very stony loam

Bw—4 to 15 inches; extremely channery loam

R—15 to 60 inches; bedrock

Lowder and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- depressions
- drainageways

Slope: 2 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/bluejoint

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from quartzite

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- A—0 to 7 inches; very cobbly loam
- Bg—7 to 33 inches; very cobbly sandy clay loam
- BCg—33 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 10 percent

Littlesalmon and similar soils: 5 percent

Rubble land: 5 percent

Management Considerations

Waldbillig, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Littlesalmon

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

15NE2—Rubycreek-Kloutch-Lilylake families, complex, weakly glaciated mountain slopes and ridges

Interpretive focus: Forestland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,460 to 8,890

Mean annual precipitation: 31 to 47 inches

Frost-free period: 30 to 50 days

Note: This landform consists of 1st to 3rd order intermittent or perennial streams. Most drainage channels are poorly integrated with others and are weakly incised.

Component Description

Rubycreek, extremely bouldery and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Landform: Weakly glaciated mountain slopes

Slope: 10 to 45 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush-menziesia phase
- subalpine fir/smooth woodrush-grouse whortleberry phase
- subalpine fir/beargrass-grouse whortleberry phase
- subalpine fir-whitebark pine/grouse whortleberry

Surface layer texture: Bouldery ashy silt loam

Rock fragments on the soil surface: 2 to 10 percent boulders, metasedimentary, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over till derived from metasedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

- Oe—0 to 1 inches; moderately decomposed plant material
- E—1 to 2 inches; bouldery ashy silt loam
- Bw—2 to 14 inches; bouldery ashy silt loam
- 2BC—14 to 36 inches; very stony sandy loam
- 2C—36 to 60 inches; very gravelly loamy sand

Kloutch, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform: Weakly glaciated mountain slopes

Slope: 10 to 45 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush-grouse whortleberry phase
- subalpine fir/beargrass-grouse whortleberry phase
- subalpine fir/beargrass-blue huckleberry phase
- subalpine fir-whitebark pine/grouse whortleberry

Surface layer texture: Very cobbly ashy loam

Rock fragments on the soil surface: 0.01 to 3.00 percent boulders, quartzite

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Colluvium derived from quartzite and/or till derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

Oe—0 to 1 inches; moderately decomposed plant material

E—1 to 2 inches; very cobbly ashy loam

Bw—2 to 6 inches; very cobbly ashy loam

BC—6 to 26 inches; very gravelly fine sandy loam

C—26 to 60 inches; very gravelly fine sandy loam

Lilylake and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts

Landform: Weakly glaciated mountain slopes

Slope: 0 to 12 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Organic material over alluvium derived from mixed

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

Oa—0 to 11 inches; mucky peat

Ag—11 to 17 inches; stony loam

2Cg—17 to 60 inches; very gravelly loamy coarse sand

Additional Components

Crawfish, extremely bouldery and similar soils: 0 to 10 percent

Rock outcrop: 0 to 10 percent

Rubble land: 0 to 5 percent

Management Considerations

Rubycreek, extremely bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Kloutch, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lilylake

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Crawfish, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

15UB2—Elve-Garlet families-Rock outcrop complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve, rubbly and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from igneous, metamorphic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; very stony loam
- E—5 to 11 inches; very stony loam
- Bw—11 to 32 inches; extremely flaggy loam
- BC—32 to 60 inches; extremely flaggy coarse sandy loam

Garlet and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Till derived from igneous, metamorphic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

E1—0 to 6 inches; very cobbly loam

E2—6 to 15 inches; very cobbly loam

Bw/E—15 to 27 inches; very cobbly loam

BC—27 to 60 inches; extremely cobbly loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick, very stony and similar soils: 10 percent

Worock and similar soils: 10 percent

Management Considerations

Elve, rubbly

- Low bearing strength

Garlet

- Low bearing strength

Rock outcrop

- Nonsoil material

Elvick, very stony

- High water table
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

15UD2—Garlet-Bata families-Rock outcrop complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,990

Mean annual precipitation: 22 to 29 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, very stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Landform: Ground moraines

Slope: 10 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw—19 to 46 inches; very cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Bata and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- Bw—3 to 12 inches; gravelly ashy loam
- 2E/Bt—12 to 23 inches; very gravelly sandy loam
- 2Bt—23 to 60 inches; very gravelly sandy clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick, very stony and similar soils: 10 percent

Holloway and similar soils: 10 percent

Management Considerations

Garlet, very stony

- Low bearing strength
- Surface compaction hazard

Bata

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Elvick, very stony

- High water table
- Low bearing strength
- Surface compaction hazard

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

15UD3—Garlet family-Rock outcrop-Bata family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, extremely bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw—19 to 46 inches; very cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Bata and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- Bw—3 to 12 inches; gravelly ashy loam
- 2E/Bt—12 to 23 inches; very gravelly sandy loam
- 2Bt—23 to 60 inches; very gravelly sandy clay loam

Additional Components

Elvick and similar soils: 10 percent

Worock and similar soils: 5 percent

Management Considerations

Garlet, extremely bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Bata

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

15UDB—Garlet-Bata-Elvick families, complex, nivational mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, very bouldery and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw—19 to 46 inches; very cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Bata and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Ground moraines

Slope: 25 to 50 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

Bw—3 to 12 inches; gravelly ashy loam

2E/Bt—12 to 23 inches; very gravelly sandy loam

2Bt—23 to 60 inches; very gravelly sandy clay loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/queencup beadlily

Surface layer texture: Very bouldery loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and siltstone

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

E1—0 to 7 inches; very bouldery loam

E2—7 to 18 inches; very bouldery loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 5 percent

Rubble land: 3 percent

Water: 2 percent

Management Considerations

Garlet, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bata

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Water

- Nonsoil material

15UE2—Kloutch family-Rock outcrop-Waldbillig family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,660 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform: Backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush
- whitebark pine
- alpine larch-subalpine fir

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over drift derived from quartzite and/or dolomite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bw—7 to 27 inches; very gravelly fine sandy loam

BC—27 to 60 inches; very cobbly fine sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Waldbillig, extremely stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Haplocryepts

Landform:

- footslope on valley floors
- toeslope on valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 3 to 15 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 28 inches; very gravelly fine sandy loam
- 2E&Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Bata and similar soils: 10 percent

Elvick, very stony and similar soils: 10 percent

Management Considerations

Kloutch

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Waldbillig, extremely stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick, very stony

- High water table
- Low bearing strength
- Surface compaction hazard

15UE3—Kloutch family-Rock outcrop-Elvick family, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- shoulder on ground moraines
- backslope on ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over drift derived from quartzite and/or dolomite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; cobbly ashy loam
- Bw—7 to 27 inches; very gravelly fine sandy loam
- BC—27 to 60 inches; very cobbly fine sandy loam

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Elvick, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Haplocryepts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/smooth woodrush

Surface layer texture: Very bouldery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and siltstone

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

E1—0 to 7 inches; very bouldery loam

E2—7 to 18 inches; very bouldery loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Waldbillig, extremely stony and similar soils: 10 percent

Rubble land: 8 percent

Water: 2 percent

Management Considerations

Kloutch

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Elvick, very stony

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Waldbillig, extremely stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Water

- Nonsoil material

15UH2—Ratiopeak-Sebud-Arrowpeak families, complex, steep mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Ratiopeak, stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

A—0 to 10 inches; gravelly loam

Bt—10 to 35 inches; very gravelly clay loam

Bk—35 to 60 inches; very gravelly loam

Sebud, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

A—0 to 10 inches; cobbly loam

Bw—10 to 44 inches; very gravelly loam

BC—44 to 60 inches; very cobbly loam

Arrowpeak and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

A—0 to 6 inches; very cobbly loam

Bw—6 to 17 inches; extremely cobbly loam

R—17 to 60 inches; bedrock

Additional Components

Marcetta and similar soils: 10 percent

Management Considerations

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

Sebud, very bouldery

- Low bearing strength
- Surface compaction hazard

Arrowpeak

- Shallow soil

Marcetta

- Low bearing strength
- Surface compaction hazard

15VD3—Garlet-Cowood-Elvick families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Ground moraines

Slope: 20 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

E1—0 to 6 inches; very cobbly loam

E2—6 to 15 inches; very cobbly loam

Bw/E—15 to 27 inches; very cobbly loam

BC—27 to 60 inches; extremely cobbly loam

Cowood, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 20 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

E—0 to 4 inches; very cobbly loam

Bw—4 to 17 inches; very stony loam

R—17 to 60 inches; bedrock

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/queencup beadlily

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from andesite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Finn and similar soils: 5 percent

Management Considerations

Garlet, very stony

- Steep slopes
- Erodible surface
- Low bearing strength

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

15VDE—Worock-Cowood families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Worock, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Soil Survey of Deerlodge National Forest Area, Montana

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 19 inches; stony loam

Bt—19 to 53 inches; very gravelly clay loam

BC—53 to 60 inches; very gravelly clay loam

Cowood, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Entrocrypts

Landform:

- mountain slopes
- summit on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

E—0 to 4 inches; very cobbly loam

Bw—4 to 17 inches; very stony loam

R—17 to 60 inches; bedrock

Additional Components

Elve, very stony and similar soils: 10 percent

Elvick, very bouldery and similar soils: 10 percent

Finn and similar soils: 10 percent

Management Considerations

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elve, very stony

- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

15VE2—Garlet-Cowood-Worock families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,000

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Garlet and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

E1—0 to 6 inches; very cobbly loam

E2—6 to 15 inches; very cobbly loam

Bw/E—15 to 27 inches; very cobbly loam

BC—27 to 60 inches; extremely cobbly loam

Cowood, extremely stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 3 to 15 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- E—0 to 4 inches; very cobbly loam
- Bw—4 to 17 inches; very stony loam
- R—17 to 60 inches; bedrock

Worock and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 19 inches; stony loam
- Bt—19 to 53 inches; very gravelly clay loam
- BC—53 to 60 inches; very gravelly clay loam

Additional Components

Lowder and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Garlet

- Low bearing strength

Cowood, extremely stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

15VEE—Worock-Cowood-Finn families, complex, steep glaciated mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,000

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Worock, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 19 inches; stony loam

Bt—19 to 53 inches; very gravelly clay loam

BC—53 to 60 inches; very gravelly clay loam

Cowood, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountain slopes
- summit on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- alpine larch-subalpine fir
- whitebark pine
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- E—0 to 4 inches; very cobbly loam
- Bw—4 to 17 inches; very stony loam
- R—17 to 60 inches; bedrock

Finn and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform: Drainageways

Slope: 0 to 10 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/bluejoint

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from volcanic rock

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 11 inches; gravelly loam
- Bw1—11 to 17 inches; very gravelly loam
- Bw2—17 to 23 inches; very gravelly sandy clay loam
- BC—23 to 60 inches; very cobbly sandy clay loam

Additional Components

Elve, very stony and similar soils: 10 percent

Elvick, very bouldery and similar soils: 10 percent

Management Considerations

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve, very stony

- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

18B—Lone Rock cobbly loam, 0 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,500

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Lone Rock and similar soils

Composition: 85 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Haplustolls

Landform: Tread on stream terraces

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

A—0 to 7 inches; cobbly loam

Bw—7 to 11 inches; very cobbly sandy loam

C—11 to 60 inches; very cobbly sand

Additional Components

Lone Rock, greater slopes and similar soils: 5 percent

Perma and similar soils: 5 percent

Sarbo and similar soils: 5 percent

Management Considerations

Lone Rock

- Low bearing strength
- Surface compaction hazard

Lone Rock, greater slopes

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Sarbo

- Low bearing strength
- Surface compaction hazard

21GD2—Ovando-Blacklead-Petty families, complex, moderately steep young moraines

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 40 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- summit on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/grouse whortleberry

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam
- E2—5 to 11 inches; very bouldery loamy coarse sand
- E and Bt—11 to 60 inches; very bouldery loamy sand

Blacklead and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

A—0 to 4 inches; gravelly sandy loam

A&Bw1—4 to 14 inches; very gravelly sandy loam

A&Bw2—14 to 41 inches; extremely gravelly sandy loam

R—41 to 60 inches; bedrock

Petty and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- depressions
- footslope on ground moraines
- toeslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.5 inches

Typical profile:

Bw—0 to 8 inches; bouldery ashy loam

2E—8 to 18 inches; very gravelly coarse sandy loam

2E and Bt—18 to 32 inches; very gravelly coarse sandy loam

2C—32 to 60 inches; very gravelly loamy coarse sand

Additional Components

Elvick and similar soils: 5 percent

Kurrie and similar soils: 5 percent

Lowder and similar soils: 5 percent

Management Considerations

Ovando, extremely bouldery

- Cutslope slumping
- Cutslope erosion

Blackleed

- None

Petty

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Kurrie

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21GH2—Opitz-Libeg-Sebud families, complex, moderately steep young moraines

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Opitz and similar soils

Composition: 45 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Landform:

- ground moraines
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

- A—0 to 10 inches; sandy loam
- Bt1—10 to 15 inches; gravelly sandy clay loam
- Bt2—15 to 22 inches; gravelly sandy loam
- BC—22 to 36 inches; gravelly loamy coarse sand
- Cr—36 to 57 inches; bedrock
- R—57 to 60 inches; bedrock

Libeg and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 5 inches; loam
- Bt1—5 to 15 inches; gravelly loam
- Bt2—15 to 35 inches; very cobbly sandy clay loam
- BC—35 to 60 inches; extremely cobbly sandy clay loam

Sebud and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- A1—0 to 3 inches; gravelly sandy loam
- A2—3 to 8 inches; very cobbly coarse sandy loam
- BC—8 to 60 inches; very stony coarse sandy loam

Additional Components

Finn and similar soils: 10 percent

Marcetta and similar soils: 5 percent

Management Considerations

Opitz

- Low bearing strength

Libeg

- Low bearing strength
- Surface compaction hazard

Sebud

- None

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

21GJ1—Lilylake-Mariel families, complex, alluvial basins

Interpretive focus: Riparian

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,100 to 8,070

Mean annual precipitation: 22 to 42 inches

Frost-free period: 35 to 65 days

Note: This landform is enclosed by mountain slopes and typically has low-gradient, meandering streams.

Component Description

Lilylake and similar soils

Composition: 65 percent

Taxonomic class: Sandy-skeletal, mixed Histic Cryaquepts

Landform:

- drainageways
- kettles

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Organic material over alluvium derived from mixed

Flooding: None

Water table: Present

Ponding duration: Brief

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

Oa—0 to 11 inches; mucky peat

Ag—11 to 17 inches; stony loam

2Cg—17 to 60 inches; very gravelly loamy coarse sand

Marjel and similar soils

Composition: 30 percent
Taxonomic class: Euic Typic Cryohemists
Landform: Proglacial lakes (relict)
Slope: 0 to 2 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Organic material
Flooding: None
Water table: Present
Ponding duration: Long
Available water capacity to 60-inch depth: Approximately 1.6 inches
Typical profile:
Oe—0 to 52 inches; mucky peat
2C—52 to 60 inches; silt loam

Additional Components

Jurvannah and similar soils: 0 to 6 percent

Management Considerations

Note: This unit has a fluctuating water table.

Lilylake

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Marjel

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Jurvannah

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

21GJ2—Finn-Elvick families-Water complex, moderately steep young moraines

Interpretive focus: Multiple-use wet shrublands and meadows
Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,300
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Finn, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- depressions
- drainageways
- ground moraines

Slope: 0 to 10 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/bluejoint

Surface layer texture: Gravelly loam

Rock fragments on the soil surface:

- 0.01 to 0.10 percent stones, granite
- 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from granite

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 11 inches; gravelly loam
- Bw1—11 to 17 inches; very gravelly loam
- Bw2—17 to 23 inches; very gravelly sandy clay loam
- BC—23 to 60 inches; very cobbly sandy clay loam

Elvick, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- ground moraines

Slope: 0 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- spruce/queencup beadlily
- subalpine fir/queencup beadlily

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface:

- 0.01 to 0.10 percent stones, granite
- 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- E1—0 to 7 inches; very cobbly loam
- E2—7 to 18 inches; very cobbly loam

Soil Survey of Deerlodge National Forest Area, Montana

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Water

Composition: 15 percent

Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.

Landform: Glacial lakes

Additional Components

Dunkleber and similar soils: 10 percent

Management Considerations

Finn, very bouldery

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

Dunkleber

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

21ND2—Evaro-Waldbillig-Littlesalmon families, complex, moderately steep young moraines

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Evaro and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- summit on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Soil Survey of Deerlodge National Forest Area, Montana

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Stony ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over drift derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; stony ashy loam

Bw—5 to 8 inches; stony ashy loam

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Waldbillig and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform:

- footslope on ground moraines
- toeslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy silt loam

2E—12 to 28 inches; very gravelly fine sandy loam

2E&Bt—28 to 60 inches; very gravelly sandy loam

Littlesalmon and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Andic Eutrocryepts

Landform:

- backslope on ground moraines
- summit on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- subalpine fir/grouse whortleberry

Soil Survey of Deerlodge National Forest Area, Montana

- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over till derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 19 inches; gravelly fine sandy loam
- 2E/Bw—19 to 60 inches; extremely gravelly loamy sand

Additional Components

Bata, very stony and similar soils: 5 percent

Elvick, very bouldery and similar soils: 5 percent

Lowder and similar soils: 5 percent

Management Considerations

Evapo

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Little Salmon

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21UA2—Gambler-Elve-Elvick families, complex, moderately steep young moraines

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Gambler, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/pinegrass

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

E—0 to 12 inches; stony loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 52 inches; very gravelly clay loam

Bt2—52 to 60 inches; very gravelly clay loam

Elve, rubbly and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/pinegrass

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly slope alluvium and/or colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; very stony loam
- E—5 to 11 inches; very stony loam
- Bw—11 to 32 inches; extremely flaggy loam
- BC—32 to 60 inches; extremely flaggy coarse sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Slope: 0 to 10 percent

Native plant cover type: Forestland

Habitat type(s):

- spruce/queencup beadlily
- spruce/twinflower

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- E1—0 to 7 inches; very cobbly loam
- E2—7 to 18 inches; very cobbly loam
- Bw—18 to 38 inches; very cobbly sandy loam
- BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Garlet and similar soils: 5 percent

Management Considerations

Gambler, very stony

- Low bearing strength
- Surface compaction hazard

Elve, rubbly

- Low bearing strength

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Garlet

- Low bearing strength
- Surface compaction hazard

**21UC3—Garlet-Worock-Waldbillig families, complex,
moderately steep young moraines**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Garlet, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw/E—19 to 46 inches; very cobbly loam
- Bk—46 to 70 inches; very cobbly loam

Worock, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Ground moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 19 inches; stony loam
- Bt—19 to 53 inches; very gravelly clay loam
- BC—53 to 60 inches; very gravelly clay loam

Waldbillig and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- footslope on ground moraines
- toeslope on ground moraines

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy silt loam

2E—12 to 28 inches; very gravelly fine sandy loam

2E&Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Elvick and similar soils: 10 percent

Bata, stony and similar soils: 5 percent

Loberg and similar soils: 5 percent

Lowder and similar soils: 5 percent

Management Considerations

Garlet, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Bata, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

**21UCF—Yreka-Winkler-Elvick families, complex,
moderately steep young moraines**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Yreka, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Ground moraines

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

E—0 to 12 inches; stony loam

E/Bt—12 to 18 inches; gravelly loam

Bt—18 to 60 inches; very gravelly clay loam

Winkler, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform: Ground moraines

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

A—0 to 3 inches; very gravelly loam

E and Bt—3 to 60 inches; very gravelly sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Slope: 0 to 10 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- spruce/queencup beadlily
- spruce/twinflower

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Repp and similar soils: 10 percent

Management Considerations

Yreka, very stony

- Low bearing strength
- Surface compaction hazard

Winkler, very stony

- None

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Repp

- Low bearing strength

21UD2—Garlet-Worock-Waldbillig families, complex, moderately steep young moraines, cool

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform:

- shoulder on ground moraines
- backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw/E—19 to 46 inches; very cobbly loam
- Bk—46 to 70 inches; very cobbly loam

Worock, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- toeslope on ground moraines
- footslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 19 inches; stony loam
- Bt—19 to 53 inches; very gravelly clay loam
- BC—53 to 60 inches; very gravelly clay loam

Waldbillig and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- footslope on ground moraines
- toeslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 28 inches; very gravelly fine sandy loam
- 2E&Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Bata, stony and similar soils: 10 percent

Elvick, very stony and similar soils: 10 percent

Loberg and similar soils: 5 percent

Lowder and similar soils: 5 percent

Management Considerations

Garlet, very bouldery

- Low bearing strength
- Surface compaction hazard

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Waldbillig

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick, very stony

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21UE2—Ovando-Bata families-Rock outcrop complex, moderately steep young moraines

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,220 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Ovando and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- backslope on ground moraines
- shoulder on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Volcanic ash over colluvium and/or till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- E1—0 to 5 inches; very bouldery sandy loam
- E2—5 to 20 inches; very gravelly sandy loam
- E and Bt—20 to 60 inches; very cobbly loamy sand

Bata, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- footslope on ground moraines
- toeslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- Bw—3 to 12 inches; gravelly ashy silt loam
- 2E/Bt—12 to 23 inches; very gravelly sandy loam
- 2Bt—23 to 60 inches; very gravelly sandy clay loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Finn and similar soils: 10 percent

Waldbillig, extremely stony and similar soils: 10 percent

Hun and similar soils: 5 percent

Management Considerations

Ovando

- Surface boulders
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Waldbillig, extremely stony

- Steep slopes
- Erodible surface

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hun

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

21UF2—Bata-Lowder-Elve families, complex, moderately steep young moraines

Interpretive focus: Multiple-use wet forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,500

Mean annual precipitation: 18 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Bata, stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/twinflower

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

Bw—3 to 12 inches; gravelly ashy silt loam

2E/Bt—12 to 23 inches; very gravelly sandy loam

2Bt—23 to 60 inches; very gravelly sandy clay loam

Lowder and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Landform:

- depressions
- drainageways

Slope: 2 to 20 percent

Native plant cover type: Forestland

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from quartzite

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bg—7 to 33 inches; very cobbly sandy clay loam

BCg—33 to 60 inches; very gravelly sandy loam

Elve, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/twinflower

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 5 inches; very cobbly loam

Bw—5 to 60 inches; very gravelly loam

Management Considerations

Bata, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elve, very stony

- Low bearing strength
- Surface compaction hazard

21UH2—Libeg-Marcetta-Finn families, complex, moderately steep young moraines

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Libeg, very bouldery and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.4 inches

Typical profile:

A—0 to 6 inches; very stony loam

Bt1—6 to 16 inches; very stony loam

Bt2—16 to 30 inches; very stony sandy clay loam

BC—30 to 60 inches; extremely stony sandy loam

Marcetta and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform: Mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

A1—0 to 10 inches; gravelly loam

A2—10 to 17 inches; very gravelly loam

AB—17 to 48 inches; very gravelly loam

C—48 to 60 inches; extremely gravelly loam

Finn and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- depressions
- drainageways
- ground moraines

Slope: 0 to 10 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Management Considerations

Libeg, very bouldery

- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21UHF—Braziel-Shawmut-Finn families, complex, moderately steep young moraines

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Braziel, very bouldery and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform: Ground moraines

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 8 inches; stony loam

Bt1—8 to 17 inches; very stony loam

Soil Survey of Deerlodge National Forest Area, Montana

Bt2—17 to 43 inches; very gravelly clay loam

BC—43 to 60 inches; extremely gravelly loam

Shawmut and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Ground moraines

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 3 inches; gravelly loam

Bt—3 to 12 inches; very gravelly clay loam

Bk1—12 to 24 inches; very gravelly loam

Bk2—24 to 60 inches; extremely gravelly loam

Finn and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- depressions
- drainageways
- ground moraines

Slope: 0 to 10 percent, southwest to southeast aspects

Native plant cover type: Forestland

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Management Considerations

Braziel, very bouldery

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table

- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

21UJ1—Finn-Lowder families, complex, moderately steep young moraines

Interpretive focus: Multiple-use wet shrublands and meadows

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Finn and similar soils

Composition: 75 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- flood plains
- stream terraces

Slope: 0 to 10 percent

Native plant cover type: Forestland

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium and/or glaciofluvial deposits derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Lowder and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Landform:

- depressions
- drainageways
- flood plains

Slope: 2 to 20 percent

Native plant cover type: Forestland

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium and/or glaciofluvial deposits derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bg—7 to 33 inches; very cobbly sandy clay loam

BCg—33 to 60 inches; very gravelly sandy loam

Management Considerations

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

22LC2—Vitroff-Figaro-Goosepeak families, complex, moderately steep soft volcanics

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Vitroff and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Toeslope on debris flows

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from rhyolite and/or tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Figaro and similar soils

Composition: 25 percent

Taxonomic class: Ashy, glassy Vitrandic Haplocryalfs

Landform: Toeslope on debris flows

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass
- Douglas-fir/twinflower

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium derived from rhyolite and/or clayey colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bt/E—7 to 18 inches; cobbly ashy clay loam

Bt—18 to 30 inches; ashy clay loam

BC—30 to 60 inches; ashy clay loam

Goosepeak and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform: Toeslope on debris flows

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- spruce/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from rhyolite and/or colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Lowder and similar soils: 10 percent

Management Considerations

Vitroff

- Low bearing strength
- Surface compaction hazard

Figaro

- Low bearing strength
- Surface compaction hazard

Goosepeak

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

22LD2—Vitroff-Figaro-Goosepeak families, complex, moderately steep soft volcanics, moist

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Vitroff and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Toeslope on debris flows

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from rhyolite and/or tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Figaro and similar soils

Composition: 25 percent

Taxonomic class: Ashy, glassy Vitrandic Haplocryalfs

Landform: Toeslope on debris flows

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium derived from rhyolite and/or clayey colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bt/E—7 to 18 inches; cobbly ashy clay loam

Bt—18 to 30 inches; ashy clay loam

BC—30 to 60 inches; ashy clay loam

Goosepeak and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform: Toeslope on debris flows

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from rhyolite and/or colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Lowder and similar soils: 10 percent

Management Considerations

Vitroff

- Low bearing strength
- Surface compaction hazard

Figaro

- Low bearing strength
- Surface compaction hazard

Goosepeak

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

22UC2—Loberg-Worock-Danaher families, complex, moderately steep old moraines

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils

Composition: 45 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Backslope on pediments

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- E—0 to 12 inches; cobbly clay loam
- Bt/E—12 to 20 inches; very cobbly loam
- Bt1—20 to 49 inches; very cobbly clay
- Bt2—49 to 66 inches; very cobbly sandy clay
- BC—66 to 72 inches; very cobbly clay loam

Worock, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Footslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Stony loam
Rock fragments on the soil surface: 0.10 to 3.00 percent stones
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Drift derived from sandstone and shale
Flooding: None
Available water capacity to 60-inch depth: Approximately 6.1 inches
Typical profile:
 Oi—0 to 1 inches; slightly decomposed plant material
 E—1 to 19 inches; stony loam
 Bt—19 to 53 inches; very gravelly clay loam
 BC—53 to 60 inches; very gravelly clay loam

Danaher and similar soils

Composition: 15 percent
Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs
Landform:

- landslides
- footslope on pediments
- toeslope on pediments

Slope: 10 to 35 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/ninebark
Surface layer texture: Stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey colluvium derived from sandstone and shale
Flooding: None
Available water capacity to 60-inch depth: Approximately 9.0 inches
Typical profile:
 Oi—0 to 2 inches; slightly decomposed plant material
 E—2 to 8 inches; stony loam
 E/Bt—8 to 13 inches; clay loam
 Bt—13 to 60 inches; gravelly clay

Additional Components

Finn and similar soils: 14 percent
Redchief, very stony and similar soils: 5 percent
Water: 1 percent

Management Considerations

Loberg

- Low bearing strength
- Surface compaction hazard

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Danaher

- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Finn

- Flooding
- High water table

- High windthrow hazard
 - Low bearing strength
 - Surface compaction hazard
- Redchief, very stony
- Low bearing strength
 - Surface compaction hazard
- Water
- Nonsoil material

22UCD—Loberg-Worock-Danaher families, complex, unstable moderately steep old moraines

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- footslope on ground moraines
- backslope on ground moraines
- footslope on landslides

Slope: 10 to 35 percent

Native plant cover type: Forestland

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

E—0 to 12 inches; cobbly loam

Bt/E—12 to 20 inches; very cobbly loam

Bt1—20 to 49 inches; very cobbly clay

Bt2—49 to 66 inches; very cobbly clay

BC—66 to 72 inches; very cobbly clay loam

Worock, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 19 inches; stony loam

Bt—19 to 53 inches; very gravelly clay loam

BC—53 to 60 inches; very gravelly clay loam

Danaher and similar soils

Composition: 15 percent

Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs

Landform:

- landslides
- footslope on pediments

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/ninebark

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; gravelly loam

E/Bt—8 to 13 inches; clay loam

Bt—13 to 60 inches; gravelly clay

Additional Components

Lowder and similar soils: 14 percent

Elvick and similar soils: 6 percent

Redchief and similar soils: 5 percent

Management Considerations

Loberg

- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Danaher

- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Lowder

- Flooding
- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Redchief

- Low bearing strength
- Surface compaction hazard

22UD2—Loberg-Elvick-Garlet families, complex, moderately steep old moraines

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Loberg and similar soils

Composition: 30 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Pediments

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

E—0 to 12 inches; gravelly loam

Bt/E—12 to 20 inches; very cobbly loam

Bt1—20 to 49 inches; very cobbly clay

Bt2—49 to 66 inches; very cobbly clay

BC—66 to 72 inches; very cobbly clay loam

Elvick, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocryepts

Landform:

- depressions
- drainageways
- toeslope on ground moraines

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 0 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/queencup beadlily

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface:

- 0.01 to 0.10 percent stones, granite
- 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Garlet, extremely bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 46 inches; very cobbly loam

Bk—46 to 70 inches; very cobbly loam

Additional Components

Danaher and similar soils: 10 percent

Helmville and similar soils: 10 percent

Management Considerations

Loberg

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Garlet, extremely bouldery

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

22UH2—Redchief-Libeg-Finn families, complex, moderately steep old moraines

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils

Composition: 55 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform: Backslope on ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

A—0 to 10 inches; stony loam

Bt1—10 to 18 inches; very gravelly clay loam

Bt2—18 to 60 inches; very gravelly clay

Libeg and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Ground moraines

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt1—8 to 22 inches; very gravelly loam

Bt2—22 to 60 inches; very gravelly loam

Finn and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform: Drainageways

Slope: 0 to 10 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Management Considerations

Redchief

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

25B—Straw silty clay loam, 0 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Straw and similar soils

Composition: 85 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Cumulic Haplustolls

Landform: Micro-low on alluvial fans

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Silty clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 10.8 inches

Typical profile:

Ap—0 to 6 inches; silty clay loam

Bw—6 to 60 inches; clay loam

Additional Components

Martinsdale and similar soils: 5 percent

Perma and similar soils: 5 percent

Quigley and similar soils: 5 percent

Management Considerations

Straw

- Low bearing strength
- Surface compaction hazard

Martinsdale

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Quigley

- Low bearing strength
- Surface compaction hazard

28C—Kilgore-Danielvil complex, 2 to 8 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,590 to 6,840

Mean annual precipitation: 15 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Kilgore and similar soils

Composition: 55 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive

Cumulic Cryaquolls

Landform: Drainageways

Slope: 2 to 4 percent

Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Silty clay loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: None
Water table: Present
Available water capacity to 60-inch depth: Approximately 7.0 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 19 inches; silty clay loam
Ag—19 to 29 inches; loam
2Cg—29 to 38 inches; gravelly sandy loam
2C—38 to 60 inches; very gravelly coarse sand

Danielvil, wet and similar soils

Composition: 30 percent
Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls
Landform: Stream terraces
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material: Alluvium
Flooding: None
Water table: Present
Available water capacity to 60-inch depth: Approximately 7.0 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 13 inches; loam
Bw—13 to 23 inches; gravelly sandy loam
BC—23 to 34 inches; gravelly sandy loam
2C—34 to 60 inches; gravelly coarse sandy loam

Additional Components

Bavdark and similar soils: 10 percent
Beeftrail and similar soils: 5 percent

Management Considerations

Kilgore

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Danielvil, wet

- Low bearing strength
- Surface compaction hazard

Bavdark

- None

Beeftrail

- Flooding

28Cg—Donald loam, 4 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 6,100

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Donald and similar soils

Composition: 85 percent

Taxonomic class: Fine, smectitic Alfic Argicryolls

Landform: Stream terraces

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.6 inches

Typical profile:

A1—0 to 5 inches; loam

A2—5 to 9 inches; loam

E—9 to 13 inches; sandy loam

Bt—13 to 23 inches; clay

BC—23 to 60 inches; clay

Additional Components

Baggs and similar soils: 5 percent

Julius and similar soils: 5 percent

Libeg and similar soils: 5 percent

Management Considerations

Donald

- Low bearing strength
- Surface compaction hazard

Baggs

- Low bearing strength

Julius

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

31CE4—Whitore-Tropal families-Rock outcrop complex, very steep cirques

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- cirque headwalls
- cirque walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 3 inches; cobbly loam
- Bw—3 to 8 inches; stony loam
- Bk1—8 to 42 inches; very cobbly loam
- Bk2—42 to 60 inches; very stony loam

Tropal and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Landform:

- cirque headwalls
- cirque walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir

Surface layer texture: Very stony very fine sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; very stony very fine sandy loam

Bk—11 to 19 inches; extremely gravelly fine sandy loam

R—19 to 60 inches; bedrock

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Hanson and similar soils: 5 percent

Rubble land: 5 percent

Starley and similar soils: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tropal

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

Hanson

- Steep slopes
- Erodible surface
- Surface compaction hazard

Rubble land

- Nonsoil material

Starley

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

31UD4—Cowood family-Rock outcrop-Evaro family, complex, very steep cirques

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Cowood and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Backslope on headwalls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- E—0 to 4 inches; very bouldery sandy loam
- Bw1—4 to 10 inches; very bouldery sandy loam
- Bw2—10 to 13 inches; very stony sandy loam
- R—13 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Evavo and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Footslope on headwalls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; cobbly ashy loam
- Bw—5 to 8 inches; very cobbly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Additional Components

Holloway and similar soils: 10 percent

Rubble land: 10 percent

Garlet and similar soils: 5 percent

Management Considerations

Cowood

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Rock outcrop

- Nonsoil material

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength

31UE4—Rock outcrop-Sig-Kloutch families, complex, very steep cirques

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,790 to 10,600

Mean annual precipitation: 28 to 42 inches

Frost-free period: 20 to 40 days

Component Description

Rock outcrop

Composition: 35 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Sig and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- cirque headwalls
- cirque walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- alpine larch-subalpine fir
- whitebark pine
- whitebark pine-subalpine fir

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- E—0 to 4 inches; very bouldery sandy loam
- Bw1—4 to 10 inches; very stony sandy loam
- Bw2—10 to 13 inches; very stony sandy loam
- R—13 to 60 inches; bedrock

Kloutch and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocrypts

Landform:

- backslope on cirque headwalls
- footslope on cirque headwalls
- backslope on cirque walls
- footslope on cirque walls
- patterned ground

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; very cobbly ashy loam
- Bw—7 to 27 inches; very gravelly fine sandy loam
- BC—27 to 60 inches; very gravelly fine sandy loam

Additional Components

Rubble land: 10 percent

Waldbillig and similar soils: 10 percent

Management Considerations

Rock outcrop

- Nonsoil material

Sig

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Kloutch

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land

- Nonsoil material

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

31UK4—Rubble land-Rock outcrop-Crawfish family, complex, cirque headwalls

Interpretive focus: Forestland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,090 to 9,480

Mean annual precipitation: 34 to 41 inches

Frost-free period: 30 to 50 days

Note: This landform occurs on glacially scoured, amphitheater shaped walls with poorly integrated drainages. Typically, glacial lakes or wet meadows are found in cirque basins. Runoff is concentrated and converges into the basin.

Component Description

Rubble land

Composition: 35 percent

Definition: Accumulation of large, angular broken rock

Landform: None assigned

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Crawfish, extremely stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Humicryepts

Landform: Cirque headwalls

Slope: 45 to 90 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir-whitebark pine/grouse whortleberry
- whitebark pine-subalpine fir
- alpine larch-subalpine fir

Surface layer texture: Very stony fine sandy loam

Rock fragments on the soil surface: 5 to 15 percent boulders, quartzite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- Oe—0 to 1 inches; moderately decomposed plant material
- A—1 to 4 inches; very stony fine sandy loam
- Bw—4 to 14 inches; very cobbly sandy loam
- R—14 to 60 inches; bedrock

Additional Components

Rubycreek, extremely bouldery and similar soils: 0 to 15 percent

Management Considerations

Rubble land

- Nonsoil material

Rock outcrop

- Nonsoil material

Crawfish, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Rubycreek, extremely bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

32—Comad-Earcree family, complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 8,000

Mean annual precipitation: 20 to 35 inches

Frost-free period: 30 to 90 days

Component Description

Comad and similar soils

Composition: 60 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- moraines
- mountaintop on mountainsides
- mountainflank on mountainsides

Slope: 8 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/ninebark

Surface layer texture: Very stony loamy sand

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Alluvium and/or colluvium and/or till derived from granite and gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 17 inches; very stony loamy sand
- AB—17 to 42 inches; very stony loamy sand
- Bw—42 to 66 inches; very stony loamy sand

Earcree and similar soils

Composition: 25 percent

Taxonomic class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Landform: Footslope on hills

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or alluvium derived from schist and/or gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.2 inches

Typical profile:

- A—0 to 16 inches; gravelly sandy loam
- C—16 to 60 inches; gravelly coarse sandy loam

Additional Components

Shadow and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Comad

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Earcree

- Steep slopes
- Erodible surface
- Mass movement potential

Shadow

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

35CB4—Whitore family-Rock outcrop-Tropal family, complex, very steep trough walls

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- footslope on glacial-valley walls
- backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 3 inches; cobbly loam

Bw—3 to 8 inches; stony loam

Bk—8 to 60 inches; very stony loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Tropal and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; stony loam
- Bk1—4 to 13 inches; extremely gravelly loam
- Bk2—13 to 18 inches; extremely gravelly loam
- R—18 to 60 inches; bedrock

Additional Components

Rumsey and similar soils: 10 percent

Garlet and similar soils: 5 percent

Hanson and similar soils: 5 percent

Rubble land: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tropal

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Surface compaction hazard

Rubble land

- Nonsoil material

35CD4—Whitore family-Rock outcrop-Tropal family, complex, very steep trough walls, cool

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform:

- footslope on glacial-valley walls
- backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 3 inches; cobbly loam
- Bw—3 to 8 inches; stony loam
- Bk—8 to 60 inches; very stony loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Tropal and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocrypts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; stony loam
- Bk1—4 to 13 inches; extremely gravelly loam
- Bk2—13 to 18 inches; extremely gravelly loam
- R—18 to 60 inches; bedrock

Additional Components

- Rubble land: 10 percent
- Rumsey and similar soils: 10 percent
- Garlet and similar soils: 5 percent
- Hanson and similar soils: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tropal

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Surface compaction hazard

35CE4—Rock outcrop-Tropal family-Rubble land complex, very steep trough walls

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Tropal and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; stony loam
- Bk1—4 to 13 inches; extremely gravelly loam
- Bk2—13 to 18 inches; extremely gravelly loam
- R—18 to 60 inches; bedrock

Rubble land

Composition: 20 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Garlet and similar soils: 10 percent

Rumsey and similar soils: 5 percent

Whitore and similar soils: 5 percent

Management Considerations

Rock outcrop

- Nonsoil material

Tropal

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

35GE4—Sig-Leighcan families-Rock outcrop complex, very steep trough walls

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Sig and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 5 inches; very stony loam

Bw—5 to 15 inches; very cobbly sandy loam

R—15 to 60 inches; bedrock

Leighcan, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- alpine larch-subalpine fir
- whitebark pine
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

- E—0 to 4 inches; gravelly sandy loam
- Bw1—4 to 9 inches; very gravelly sandy loam
- Bw2—9 to 60 inches; extremely gravelly sandy loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Jeru and similar soils: 10 percent

Rubble land: 10 percent

Hun and similar soils: 5 percent

Management Considerations

Sig

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Leighcan, very bouldery

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Jeru

- Steep slopes
- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Hun

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

**35UB4—Elve-Cowood families-Rock outcrop complex,
very steep trough walls**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 5 inches; very cobbly loam

Bw—5 to 60 inches; very gravelly loam

Cowood and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

E—0 to 4 inches; very bouldery sandy loam

Bw1—4 to 10 inches; very bouldery sandy loam

Bw2—10 to 13 inches; very stony sandy loam

R—13 to 60 inches; bedrock

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rubble land: 10 percent

Arrowpeak and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Arrowpeak

- Steep slopes
- Erodible surface
- Shallow soil

**35UC4—Garlet-Cowood families-Rock outcrop complex,
very steep trough walls**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Garlet and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

E1—0 to 4 inches; cobbly loam

E2—4 to 19 inches; very cobbly loam

Bw\E—19 to 46 inches; extremely cobbly sandy clay loam

Bk—46 to 70 inches; extremely cobbly loam

Cowood and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Entrocrypts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

E—0 to 4 inches; very bouldery sandy loam

Bw1—4 to 10 inches; very bouldery sandy loam

Bw2—10 to 13 inches; very stony sandy loam

R—13 to 60 inches; bedrock

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

35UD4—Garlet-Cowood families-Rock outcrop complex, very steep trough walls, moist

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

E1—0 to 6 inches; very cobbly loam

E2—6 to 15 inches; very cobbly loam

Bw/E—15 to 27 inches; very cobbly loam

BC—27 to 60 inches; extremely cobbly loam

Cowood and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- Douglas-fir/twinflower

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- E—0 to 4 inches; very bouldery sandy loam
- Bw1—4 to 10 inches; very bouldery sandy loam
- Bw2—10 to 13 inches; very stony sandy loam
- R—13 to 60 inches; bedrock

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Waldbillig, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: Footslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oe—0 to 2 inches; moderately decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 28 inches; very gravelly fine sandy loam
- 2E&Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Rubble land: 10 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength

Cowood

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Rock outcrop

- Nonsoil material

Waldbillig, very bouldery

- Steep slopes
- Erodible surface

- Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Rubble land
- Nonsoil material

35UE4—Kloutch family-Rock outcrop-Sig family, complex, very steep trough walls

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,760 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform: Backslope on glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite and/or dolomite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bw—7 to 27 inches; very gravelly fine sandy loam

BC—27 to 60 inches; very cobbly fine sandy loam

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Sig and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- E—0 to 4 inches; very bouldery sandy loam
- Bw1—4 to 10 inches; very stony sandy loam
- Bw2—10 to 13 inches; very stony sandy loam
- R—13 to 60 inches; bedrock

Additional Components

Jeru and similar soils: 10 percent

Waldbillig and similar soils: 10 percent

Management Considerations

Kloutch

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Sig

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Jeru

- Steep slopes
- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

35UK4—Rock outcrop-Sig family, complex, very steep trough walls

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,320 to 11,200

Mean annual precipitation: 24 to 47 inches

Frost-free period: 20 to 40 days

Component Description

Rock outcrop

Composition: 60 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Sig and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Landform: Glacial-valley walls

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from igneous, metamorphic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

E—0 to 4 inches; very bouldery sandy loam

Bw1—4 to 10 inches; very stony sandy loam

Bw2—10 to 13 inches; very stony sandy loam

R—13 to 60 inches; bedrock

Additional Components

Leighcan and similar soils: 10 percent

Rubble land: 5 percent

Management Considerations

Rock outcrop

- Nonsoil material

Sig

- Steep slopes
- Erodible surface
- Surface boulders
- Shallow soil

Leighcan

- Steep slopes
- Erodible surface

Rubble land

- Nonsoil material

37GD2—Ovando-Caseypeak families-Rock outcrop complex, moderately steep trough bottoms

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 40 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Till derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E1—1 to 5 inches; extremely bouldery sandy loam

E2—5 to 11 inches; very bouldery loamy coarse sand

E and Bt—11 to 60 inches; very bouldery loamy sand

Caseypeak, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 6 inches; very cobbly coarse sandy loam

Bw—6 to 17 inches; very gravelly sandy loam

Cr—17 to 20 inches; bedrock

R—20 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Lowder and similar soils: 10 percent

Petty and similar soils: 10 percent

Management Considerations

Ovando, extremely bouldery

- Cutslope slumping
- Cutslope erosion

Caseypeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Petty

- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

**37GE3—Sig family-Rock outcrop-Rubble land complex,
moderately steep trough bottoms**

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Sig and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Landform: Glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir

Surface layer texture: Very stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 5 inches; very stony loam
- Bw—5 to 15 inches; very cobbly sandy loam
- R—15 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Leighcan and similar soils: 10 percent

Jeru and similar soils: 5 percent

Roman and similar soils: 5 percent

Management Considerations

Sig

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Leighcan

- Steep slopes
- Erodible surface

Jeru

- Steep slopes
- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Roman

- Steep slopes
- Erodible surface

- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

37UC2—Garlet-Worock-Elvick families, complex, moderately steep trough bottoms

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Garlet, extremely bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 46 inches; very cobbly loam

Bk—46 to 70 inches; very cobbly loam

Worock, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/ninebark

Surface layer texture: Stony loam

Rock fragments on the soil surface: 0.00 to 3.00 percent stones

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 19 inches; stony loam

Bt—19 to 53 inches; very gravelly clay loam

BC—53 to 60 inches; very gravelly clay loam

Elvick, bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- depressions
- drainageways
- glacial-valley floors

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- spruce/twinflower
- spruce/queencup beadlily

Surface layer texture: Very bouldery loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Glaciofluvial deposits derived from sandstone and shale

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

E1—0 to 7 inches; very bouldery loam

E2—7 to 18 inches; very bouldery loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Water: 5 percent

Management Considerations

Garlet, extremely bouldery

- Low bearing strength
- Surface compaction hazard

Worock, very stony

- Low bearing strength
- Surface compaction hazard

Elvick, bouldery

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Water

- Nonsoil material

37UD2—Waldbillig-Bata families-Rock outcrop complex, moderately steep trough bottoms

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Waldbillig, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy silt loam

2E—12 to 28 inches; very gravelly fine sandy loam

2E&Bt—28 to 60 inches; very gravelly sandy loam

Bata, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

Bw—3 to 12 inches; gravelly ashy silt loam

2E/Bt—12 to 23 inches; very gravelly sandy loam

2Bt—23 to 60 inches; very gravelly sandy clay loam

Cowood, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Glacial-valley floors

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

E—0 to 4 inches; very cobbly loam

Bw—4 to 17 inches; very stony loam

R—17 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Lowder and similar soils: 10 percent

Evavo and similar soils: 5 percent

Management Considerations

Waldbillig, very bouldery

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

37UD3—Cowood family-Rock outcrop-Bata family, complex, moderately steep trough bottoms

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Cowood, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform: Glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- E—0 to 4 inches; very cobbly loam
- Bw—4 to 17 inches; very stony loam
- R—17 to 60 inches; bedrock

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Bata, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

Bw—3 to 12 inches; gravelly ashy silt loam

2E/Bt—12 to 23 inches; very gravelly sandy loam

2Bt—23 to 60 inches; very gravelly sandy clay loam

Waldbillig, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: Glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy silt loam

2E—12 to 28 inches; very gravelly fine sandy loam

2E&Bt—28 to 60 inches; very gravelly sandy loam

Additional Components

Lowder and similar soils: 10 percent

Evaro and similar soils: 5 percent

Management Considerations

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Bata, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

37UE3—Rock outcrop-Sig-Jeru families, complex, moderately steep trough bottoms

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Rock outcrop

Composition: 35 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Sig, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Dystricrypts

Landform:

- shoulder on glacial-valley floors
- backslope on glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, andesite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- E—0 to 4 inches; very cobbly loam
- Bw—4 to 17 inches; very stony loam
- R—17 to 60 inches; bedrock

Jeru and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystricrypts

Landform: Backslope on glacial-valley floors

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Bouldery ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- A—0 to 4 inches; bouldery ashy loam
- Bw—4 to 32 inches; very cobbly sandy loam
- BC—32 to 60 inches; very cobbly loamy sand

Additional Components

Lowder and similar soils: 10 percent

Rubble land: 5 percent

Management Considerations

Rock outcrop

- Nonsoil material

Sig, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Jeru

- Steep slopes
- Erodible surface
- Surface boulders
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

37UJ1—Finn-Lowder families, complex, moderately steep trough bottoms

Interpretive focus: Multiple-use wet shrublands and meadows

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Finn and similar soils

Composition: 75 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- toeslope on drainageways
- toeslope on glacial-valley floors
- stream terraces

Slope: 0 to 10 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Very poorly drained

Parent material: Alluvium and/or glaciofluvial deposits derived from sandstone and siltstone

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Lowder and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Landform:

- drainageways
- toeslope on glacial-valley floors
- stream terraces

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium and/or glaciofluvial deposits derived from sandstone and siltstone

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bg—7 to 33 inches; very cobbly sandy clay loam

BCg—33 to 60 inches; very gravelly sandy loam

Management Considerations

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

39D—Winspect gravelly loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Winspect and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Calciustolls

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Ak—6 to 11 inches; gravelly loam
- Bk—11 to 20 inches; very gravelly loam
- BC—20 to 60 inches; very gravelly loam

Additional Components

Shawmut and similar soils: 5 percent

Wimper and similar soils: 4 percent

Judell and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Winspect

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

Wimper

- Low bearing strength
- Surface compaction hazard

Judell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

39E—Winspect gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Winspect and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Calciustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Ak—6 to 11 inches; gravelly loam
- Bk—11 to 20 inches; very gravelly loam
- BC—20 to 60 inches; very gravelly loam

Additional Components

Shawmut and similar soils: 5 percent

Wimper and similar soils: 4 percent

Judell and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Winspect

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

Wimper

- Low bearing strength
- Surface compaction hazard

Judell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

39F—Winspect gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Winspect and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Calciustolls

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Ak—6 to 11 inches; gravelly loam
- Bk—11 to 20 inches; very gravelly loam
- BC—20 to 60 inches; very gravelly loam

Additional Components

Shawmut and similar soils: 5 percent

Wimper and similar soils: 4 percent

Judell and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Winspect

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Shawmut

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Wimper

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Judell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

41E—Perma gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Perma and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- footslope on alluvial fans
- backslope on alluvial fans
- stream terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

- A—0 to 7 inches; gravelly loam
- Bw—7 to 20 inches; very gravelly loam
- BC—20 to 60 inches; extremely cobbly sandy loam

Additional Components

Shawmut and similar soils: 5 percent

Krutar and similar soils: 4 percent

Braziel and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Perma

- Low bearing strength

Shawmut

- Low bearing strength
- Surface compaction hazard

Krutar

- Low bearing strength
- Surface compaction hazard

Braziel

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

42E—Windham gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Windham and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- A—0 to 7 inches; gravelly loam
- Bk1—7 to 21 inches; very gravelly loam
- Bk2—21 to 32 inches; very gravelly loam
- Bk3—32 to 60 inches; very gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Winspect and similar soils: 5 percent

Management Considerations

Windham

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Winspect

- Low bearing strength
- Surface compaction hazard

42Ej—Perma cobbly loam, 15 to 25 percent slopes, stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Perma, stony and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 15 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly slope alluvium and/or colluvium derived from basalt and/or metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 7 inches; cobbly loam
- Bw—7 to 36 inches; very cobbly loam
- BC—36 to 60 inches; extremely gravelly loam

Additional Components

Shawmut, stony and similar soils: 5 percent

Blaincreek, stony and similar soils: 4 percent

Hilger, very stony and similar soils: 3 percent

Rock outcrop, volcanic, sandstone: 3 percent

Management Considerations

Perma, stony

- Low bearing strength
- Surface compaction hazard

Shawmut, stony

- Low bearing strength
- Surface compaction hazard

Blaincreek, stony

- Low bearing strength
- Surface compaction hazard

Hilger, very stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic, sandstone

- Nonsoil material

42F—Windham gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Windham and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

A—0 to 7 inches; gravelly loam

Bk1—7 to 21 inches; very gravelly loam

Bk2—21 to 32 inches; very gravelly loam

Bk3—32 to 60 inches; very gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Winspect and similar soils: 5 percent

Management Considerations

Windham

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Lap

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Winspect

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

44E—Roundor loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,400

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roundor and similar soils

Composition: 85 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Calciustolls

Landform:

- footslope on hills
- backslope on hills

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.6 inches

Typical profile:

- A—0 to 6 inches; loam
- Bw—6 to 12 inches; loam
- Bk—12 to 38 inches; loam
- Cr—38 to 60 inches; unweathered bedrock

Additional Components

Boxwell and similar soils: 5 percent

Rock outcrop: 5 percent

Rothiemay and similar soils: 5 percent

Management Considerations

Roundor

- Low bearing strength
- Surface compaction hazard

Boxwell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rothiemay

- Low bearing strength
- Surface compaction hazard

46C—Roy loam, 4 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roy and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- toeslope on alluvial fans
- stream terraces

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey and cobbly alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- A—0 to 9 inches; loam
- Bt—9 to 38 inches; very cobbly clay loam
- Bck—38 to 60 inches; very cobbly clay loam

Additional Components

Danvers and similar soils: 5 percent

Fergus and similar soils: 5 percent

Shawmut and similar soils: 5 percent

Management Considerations

Roy

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

Fergus

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

46D—Roy loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roy and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- toeslope on alluvial fans
- footslope on alluvial fans
- stream terraces

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey and cobbly alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- A—0 to 9 inches; loam
- Bt—9 to 38 inches; very cobbly clay loam
- BcK—38 to 60 inches; very cobbly clay loam

Additional Components

Danvers and similar soils: 5 percent

Fergus and similar soils: 5 percent

Shawmut and similar soils: 5 percent

Management Considerations

Roy

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

Fergus

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

49D—Danvers clay loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Danvers and similar soils

Composition: 85 percent

Taxonomic class: Fine, smectitic, frigid Vertic Argiustolls

Landform: Alluvial fans

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

Ap—0 to 8 inches; clay loam

Bt—8 to 16 inches; clay loam

Bk—16 to 60 inches; clay loam

Additional Components

Danvers, cobbly and similar soils: 4 percent

Danvers, greater slopes and similar soils: 4 percent

Shawmut and similar soils: 4 percent

Quigley, calcareous and similar soils: 3 percent

Management Considerations

Danvers

- Low bearing strength
- Surface compaction hazard

Danvers, cobbly

- Low bearing strength
- Surface compaction hazard

Danvers, greater slopes

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

Quigley, calcareous

- Low bearing strength
- Surface compaction hazard

50—Hanson channery loam, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,800 to 8,850

Mean annual precipitation: 18 to 26 inches

Frost-free period: 50 to 90 days

Component Description

Hanson and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform:

- footslope on hills
- footslope on moraines

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from limestone and/or colluvium derived from limestone and/or till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- A—0 to 11 inches; channery loam
- Bk—11 to 60 inches; very gravelly loam

Additional Components

Hanson, stony and similar soils: 5 percent

Soils with thick dark surfaces and similar soils: 5 percent

Tiban and similar soils: 5 percent

Management Considerations

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson, stony

- Low bearing strength
- Surface compaction hazard

Soils with thick dark surfaces

- Onsite required

Tiban

- Low bearing strength
- Surface compaction hazard

51CC3—Whitore family-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 75 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry-pinegrass phase

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; very channery loam
- Bk—8 to 60 inches; extremely cobbly loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Rumsey and similar soils: 10 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

51CD3—Whitore-Rumsey families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; very channery loam
- Bk—8 to 60 inches; extremely cobbly loam

Rumsey and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- mountainflank on mountain slopes
- mountainbase on mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Sandy and silty volcanic ash over gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- Bw1—1 to 7 inches; gravelly ashy silt loam
- 2Bw2—7 to 41 inches; very gravelly loam
- 2Bk—41 to 60 inches; very gravelly loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

**51CE2—Whitore-Tropal families-Rubble land complex,
steep ridges and mountain slopes**

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Whitore and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform:

- summit on mountain slopes
- shoulder on mountain slopes
- patterned ground
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; very channery loam

Bk—8 to 60 inches; extremely cobbly loam

Tropal and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocrypts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- shoulder on ridges
- summit on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; stony loam

Bk1—4 to 13 inches; extremely gravelly loam

Bk2—13 to 18 inches; extremely gravelly loam

R—18 to 60 inches; bedrock

Rubble land

Composition: 20 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Rock outcrop: 10 percent

Rumsey and similar soils: 5 percent

Management Considerations

Whitore

- Low bearing strength
- Surface compaction hazard

Tropal

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Rock outcrop

- Nonsoil material

Rumsey

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

51CH2—Hanson-Tiban families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 8 inches; very gravelly loam

Bk—8 to 60 inches; very gravelly loam

Tiban and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

A—0 to 4 inches; cobbly loam

Bw—4 to 13 inches; very stony loam

Bk1—13 to 23 inches; very gravelly clay loam

Bk2—23 to 60 inches; very gravelly clay loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Hanson

- Surface compaction hazard

Tiban

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

51D—Shawmut gravelly loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,800

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Shawmut and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Alluvial fans

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 6 inches; gravelly loam

Bt—6 to 12 inches; gravelly clay loam

Btk—12 to 18 inches; very gravelly clay loam

Bk—18 to 60 inches; very gravelly loam

Additional Components

Danvers and similar soils: 4 percent
Shawmut, greater slopes and similar soils: 4 percent
Shawmut, cobbly and similar soils: 4 percent
Shawmut, calcareous and similar soils: 3 percent

Management Considerations

Shawmut

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

Shawmut, greater slopes

- Low bearing strength
- Surface compaction hazard

Shawmut, cobbly

- Low bearing strength
- Surface compaction hazard

Shawmut, calcareous

- Low bearing strength
- Surface compaction hazard

51Ds—Foxgulch-Libeg complex, 6 to 25 percent slopes, stony

Interpretive focus: Riparian-woodland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,430 to 6,560

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Foxgulch, stony and similar soils

Composition: 65 percent

Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls

Landform: Toeslope on hills

Slope: 6 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 12 inches; loam
- Bw—12 to 30 inches; loam
- BC—30 to 46 inches; sandy clay loam
- 2C—46 to 60 inches; very gravelly coarse sand

Libeg, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- footslope on hills
- backslope on hills

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: slope alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- A1—0 to 5 inches; gravelly loam
- A2—5 to 11 inches; very cobbly loam
- Bt—11 to 23 inches; very gravelly sandy clay loam
- C—23 to 60 inches; very gravelly sandy loam

Additional Components

Mooseflat and similar soils: 10 percent

Management Considerations

Foxgulch, stony

- High water table
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Mooseflat

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

51E—Shawmut gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Shawmut and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- footslope on alluvial fans
- backslope on alluvial fans
- stream terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bt—4 to 8 inches; gravelly clay loam
- Btk—8 to 25 inches; very gravelly clay loam
- Bk—25 to 60 inches; extremely gravelly loam

Additional Components

Danvers and similar soils: 5 percent

Martinsdale and similar soils: 5 percent

Quigley and similar soils: 5 percent

Management Considerations

Shawmut

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

Martinsdale

- Low bearing strength
- Surface compaction hazard

Quigley

- Low bearing strength
- Surface compaction hazard

51GD3—Blacklead family-Rubble land-Petty family, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Blackleed and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

A—0 to 4 inches; gravelly sandy loam

A&Bw1—4 to 14 inches; very gravelly sandy loam

A&Bw2—14 to 41 inches; extremely gravelly sandy loam

R—41 to 60 inches; bedrock

Rubble land

Composition: 25 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Petty and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Bw—0 to 12 inches; gravelly ashy loam

2C—12 to 60 inches; very gravelly loamy coarse sand

Ovando, extremely bouldery and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly sandy loam

E and Bt—7 to 60 inches; extremely gravelly loamy coarse sand

Additional Components

Donnelly and similar soils: 10 percent

Management Considerations

Blackleed

- Steep slopes
- Erodible surface

Rubble land

- Nonsoil material

Petty

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Ovando, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Donnelly

- Steep slopes
- Erodible surface
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

**51GE2—Leighcan family-Rubble land-Ovando family,
complex, steep ridges and mountain slopes**

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Leighcan, very bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystricrypts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- patterned ground
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

- E—0 to 4 inches; gravelly sandy loam
- Bw1—4 to 9 inches; very gravelly sandy loam
- Bw2—9 to 60 inches; extremely gravelly sandy loam

Rubble land

Composition: 25 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Ovando and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- summit on mountain slopes
- shoulder on mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- E1—0 to 5 inches; very bouldery sandy loam
- E2—5 to 20 inches; very gravelly sandy loam
- E and Bt—20 to 60 inches; very cobbly loamy sand

Additional Components

Hun and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Leighcan, very bouldery

- None

Rubble land

- Nonsoil material

Ovando

- Surface boulders
- Cutslope slumping
- Cutslope erosion

Hun

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

51GE3—Ovando family-Rubble land-Leighcan family, complex, steep ridges and mountain slopes

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Ovando and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- E1—0 to 5 inches; very bouldery sandy loam
- E2—5 to 20 inches; very gravelly sandy loam
- E and Bt—20 to 60 inches; very cobbly loamy sand

Rubble land

Composition: 25 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Leighcan, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine
- subalpine fir/smooth woodrush

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

- E—0 to 4 inches; gravelly sandy loam
- Bw1—4 to 9 inches; very gravelly sandy loam
- Bw2—9 to 60 inches; extremely gravelly sandy loam

Hun and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystricrypts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony ashy very fine sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Oe—2 to 5 inches; moderately decomposed plant material
- Bw1—5 to 14 inches; stony ashy very fine sandy loam
- 2Bw2—14 to 32 inches; very gravelly sandy loam
- 2C—32 to 60 inches; extremely cobbly coarse sand

Additional Components

Rock outcrop: 10 percent

Management Considerations

Ovando

- Steep slopes
- Erodible surface
- Surface boulders
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

Leighcan, very stony

- Steep slopes
- Erodible surface

Hun

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

51GH2—Opitz-Bavdark families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 30 to 70 days

Component Description

Opitz and similar soils

Composition: 55 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Coarse-loamy colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

- A—0 to 10 inches; sandy loam
- Bt1—10 to 15 inches; gravelly sandy clay loam
- Bt2—15 to 22 inches; gravelly sandy loam
- BC—22 to 36 inches; gravelly loamy coarse sand
- Cr—36 to 57 inches; bedrock
- R—57 to 60 inches; bedrock

Bavdark and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.1 inches

Typical profile:

- A—0 to 10 inches; coarse sandy loam
- AB—10 to 18 inches; coarse sandy loam
- Bt—18 to 42 inches; sandy clay loam
- C—42 to 60 inches; coarse sandy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Opitz

- Low bearing strength

Bavdark

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

51NC2—Evaro-Holloway-Tigeron families, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Evaro and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- mountain slopes
- shoulder on ridges
- summit on ridges
- backslope on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; cobbly ashy loam
- Bw—5 to 8 inches; very cobbly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Holloway and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- mountain slopes
- backslope on ridges
- summit on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 19 inches; very gravelly loam
- 2E&Bt—19 to 54 inches; extremely gravelly sandy loam
- 2C—54 to 60 inches; extremely gravelly sandy loam

Tigeron and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- summit on ridges
- backslope on ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 7 inches; very channery loam
- Bt&E—7 to 13 inches; very gravelly loam

Bt—13 to 60 inches; extremely gravelly clay loam

2C—60 to 66 inches; extremely gravelly loam

Additional Components

Rubble land: 5 percent

Management Considerations

Evapo

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tigeron

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

51ND3—Holloway-Evapo-Bata families, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Holloway and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 19 inches; very gravelly loam
- 2E&Bt—19 to 54 inches; extremely gravelly sandy loam
- 2C—54 to 60 inches; extremely gravelly sandy loam

Evavo and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; cobbly ashy loam
- Bw—5 to 8 inches; very cobbly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Bata, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over drift derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- Bw—3 to 12 inches; gravelly ashy silt loam
- 2E/Bt—12 to 23 inches; very gravelly sandy loam
- 2Bt—23 to 60 inches; very gravelly sandy clay loam

Additional Components

Rubble land: 10 percent

Management Considerations

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

**51NE3—Kloutch, noncalcareous-Waldbillig,
noncalcareous families-Rubble land complex, steep
ridges and mountain slopes**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; very cobbly ashy loam

Bw—7 to 27 inches; very gravelly fine sandy loam

BC—27 to 60 inches; very cobbly fine sandy loam

Waldbillig and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Haplocrypts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- ridges

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

Bw1—2 to 8 inches; cobbly ashy loam

2Bw2—8 to 22 inches; very cobbly fine sandy loam

2C—22 to 60 inches; very gravelly fine sandy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Bata, very stony and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Kloutch

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Bata, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

51NH2—Maurice-Marcetta-Libeg families, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 31 inches

Frost-free period: 30 to 70 days

Component Description

Maurice and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

A1—0 to 3 inches; channery loam

A2—3 to 13 inches; channery loam

Soil Survey of Deerlodge National Forest Area, Montana

Bw1—13 to 24 inches; very gravelly fine sandy loam

Bw2—24 to 60 inches; very gravelly fine sandy loam

Marcetta and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A1—0 to 10 inches; very gravelly loam

A2—10 to 17 inches; very gravelly loam

AB—17 to 48 inches; extremely gravelly loam

C—48 to 60 inches; extremely gravelly loam

Libeg and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 6 inches; channery loam

Bt1—6 to 16 inches; very channery loam

Bt2—16 to 30 inches; very channery sandy clay loam

BC—30 to 60 inches; extremely stony sandy loam

Additional Components

Rubble land: 10 percent

Rock outcrop: 5 percent

Management Considerations

Maurice

- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Rock outcrop

- Nonsoil material

51UC2—Tigeron-Garlet-Evaro families, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Tigeron and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower
- Douglas-fir/blue huckleberry

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 7 inches; very channery loam
- Bt&E—7 to 13 inches; very gravelly loam
- Bt—13 to 60 inches; extremely gravelly clay loam
- 2C—60 to 66 inches; extremely gravelly loam

Garlet and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

E1—0 to 4 inches; cobbly loam

E2—4 to 19 inches; very cobbly loam

Bw/E—19 to 46 inches; extremely cobbly sandy clay loam

Bk—46 to 70 inches; extremely cobbly loam

Evavo and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; cobbly ashy loam

Bw—5 to 8 inches; very cobbly ashy loam

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Tigeron

- Low bearing strength
- Surface compaction hazard

Garlet

- Low bearing strength
- Surface compaction hazard

Evavo

- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
 - Surface compaction hazard
- Rubble land
- Nonsoil material

51UD3—Garlet-Tigeron families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 8,170

Mean annual precipitation: 22 to 30 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

E1—0 to 4 inches; cobbly loam

E2—4 to 19 inches; very cobbly loam

Bw/E—19 to 46 inches; extremely cobbly sandy clay loam

Bk—46 to 70 inches; extremely cobbly loam

Tigeron and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Soil Survey of Deerlodge National Forest Area, Montana

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

E—0 to 7 inches; very channery loam

Bt&E—7 to 13 inches; very gravelly loam

Bt—13 to 60 inches; extremely gravelly clay loam

2C—60 to 66 inches; extremely gravelly loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Holloway and similar soils: 10 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

51UDB—Garlet family-Rubble land-Tigeron family, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- E1—0 to 4 inches; cobbly loam
- E2—4 to 19 inches; very cobbly loam
- Bw/E—19 to 46 inches; extremely cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Rubble land

Composition: 20 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Tigeron and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- E—0 to 7 inches; gravelly loam
- Bt&E—7 to 13 inches; very gravelly loam
- Bt—13 to 60 inches; extremely gravelly clay loam
- 2C—60 to 66 inches; extremely gravelly loam

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Tigeron

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

**51UE2—Kloutch-Waldbillig families-Rubble land complex,
steep ridges and mountain slopes**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- summit on mountain slopes
- shoulder on mountain slopes
- patterned ground
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir

Soil Survey of Deerlodge National Forest Area, Montana

- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from dolomite and/or quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bw—7 to 27 inches; very gravelly fine sandy loam

BC—27 to 60 inches; very cobbly fine sandy loam

Waldbillig and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Haplocrypts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

Bw1—2 to 8 inches; cobbly ashy loam

2Bw2—8 to 22 inches; very cobbly fine sandy loam

2C—22 to 60 inches; very gravelly fine sandy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Bata, very stony and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Kloutch

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Bata, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

51UE3—Kloutch family-Rubble land-Waldbillig family, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,600

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Kloutch and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- summit on mountain slopes
- shoulder on mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from dolomite and/or quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; cobbly ashy loam

Bw—7 to 27 inches; very gravelly fine sandy loam

BC—27 to 60 inches; very cobbly fine sandy loam

Rubble land

Composition: 30 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Waldbillig and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Haplocryepts

Landform:

- shoulder on mountain slopes
- summit on mountain slopes
- ridges

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine
- alpine larch-subalpine fir
- whitebark pine-subalpine fir
- subalpine fir/smooth woodrush

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Bw1—2 to 8 inches; cobbly ashy loam
- 2Bw2—8 to 22 inches; very cobbly fine sandy loam
- 2C—22 to 60 inches; very gravelly fine sandy loam

Additional Components

Bata, very stony and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Kloutch

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Waldbillig

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Bata, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

51UH2—Sebud-Libeg-Marcetta families, complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- A—0 to 10 inches; cobbly loam
- BC—10 to 60 inches; very cobbly loam

Libeg and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely cobbly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

- A—0 to 7 inches; extremely cobbly sandy loam
- Bt—7 to 36 inches; extremely cobbly sandy clay loam
- BC—36 to 60 inches; extremely cobbly sandy loam

Marcetta and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A1—0 to 10 inches; very gravelly loam
- A2—10 to 17 inches; very gravelly loam
- AB—17 to 48 inches; extremely gravelly loam
- C—48 to 60 inches; extremely gravelly loam

Additional Components

Rock outcrop: 5 percent

Tiban and similar soils: 5 percent

Management Considerations

Sebud

- Low bearing strength
- Surface compaction hazard

Libeg

- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tiban

- Low bearing strength
- Surface compaction hazard

**51UI3—Arrowpeak family-Rock outcrop-Sebud family,
complex, steep ridges and mountain slopes**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 8,350 to 10,600

Mean annual precipitation: 20 to 50 inches

Frost-free period: 20 to 40 days

Component Description

Arrowpeak and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- patterned ground
- ridges

Slope: 10 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 6 inches; very cobbly loam
- Bw—6 to 17 inches; extremely cobbly loam
- R—17 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Sebud and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- patterned ground
- ridges

Slope: 10 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- A—0 to 10 inches; cobbly loam
- BC—10 to 60 inches; very cobbly loam

Management Considerations

Arrowpeak

- Steep slopes
- Erodible surface
- Shallow soil

Rock outcrop

- Nonsoil material

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

51UK3—Rubble land-Arrowpeak-Sebud families, complex, steep ridges and mountain slopes

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 8,000 to 10,600

Mean annual precipitation: 28 to 50 inches

Frost-free period: 20 to 40 days

Component Description

Rubble land

Composition: 55 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Arrowpeak and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 6 inches; very cobbly loam
- Bw—6 to 17 inches; extremely cobbly loam
- R—17 to 60 inches; bedrock

Sebud and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- A—0 to 10 inches; cobbly loam
- BC—10 to 60 inches; very cobbly loam

Management Considerations

Rubble land

- Nonsoil material

Arrowpeak

- Steep slopes
- Erodible surface
- Shallow soil

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

**51VB2—Elve-Gambler families-Rubble land complex,
steep ridges and mountain slopes**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- mountain slopes
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 10 to 35 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass
Surface layer texture: Very gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Colluvium derived from volcanic rock
Flooding: None
Available water capacity to 60-inch depth: Approximately 2.8 inches
Typical profile:
 Oi—0 to 2 inches; slightly decomposed plant material
 A—2 to 8 inches; very gravelly sandy loam
 E—8 to 20 inches; very cobbly loam
 Bw—20 to 60 inches; extremely cobbly sandy loam

Gambler and similar soils

Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs
Landform: Mountain slopes
Slope: 10 to 35 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from andesite and/or tuff and/or rhyolite
Flooding: None
Available water capacity to 60-inch depth: Approximately 6.3 inches
Typical profile:
 E—0 to 12 inches; loam
 E/Bt—12 to 18 inches; gravelly loam
 Bt1—18 to 20 inches; gravelly clay loam
 Bt2—20 to 60 inches; very cobbly clay loam

Rubble land

Composition: 15 percent
Definition: Rubble land consists of areas of cobbles, stones, and boulders
Landform: None assigned

Additional Components

Hiore and similar soils: 10 percent

Management Considerations

Elve

- None

Gambler

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Hiore

- None

51VD2—Tigeron-Garlet families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,840

Mean annual precipitation: 22 to 30 inches

Frost-free period: 30 to 60 days

Component Description

Tigeron and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 7 inches; very cobbly loam
- Bt&E—7 to 13 inches; very gravelly loam
- Bt—13 to 60 inches; extremely gravelly clay loam
- 2C—60 to 66 inches; extremely gravelly loam

Garlet and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Landform: Mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 70 inches; extremely flaggy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Holloway and similar soils: 10 percent

Hiore and similar soils: 5 percent

Management Considerations

Tigeron

- Low bearing strength
- Surface compaction hazard

Garlet

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hiore

- None

51VD3—Garlet-Tigeron families-Rubble land complex, steep volcanic ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Soil Survey of Deerlodge National Forest Area, Montana

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 70 inches; extremely flaggy loam

Tigeron and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

E—0 to 7 inches; very cobbly loam

Bt&E—7 to 13 inches; very gravelly loam

Bt—13 to 60 inches; extremely gravelly clay loam

2C—60 to 66 inches; extremely gravelly loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Hiore and similar soils: 5 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Hiore

- Steep slopes
- Erodible surface

51VE3—Hiore-Tigeron families-Rubble land complex, steep ridges and mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,680 to 10,000

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Hiore and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- footslope on mountain slopes
- backslope on mountain slopes
- patterned ground
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

- A1—0 to 2 inches; sandy loam
- A2—2 to 7 inches; gravelly coarse sandy loam
- Bw—7 to 60 inches; very gravelly loamy coarse sand

Tigeron and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- backslope on mountain slopes
- footslope on mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 7 inches; very cobbly loam
- Bt&E—7 to 13 inches; very gravelly loam
- Bt—13 to 60 inches; extremely gravelly clay loam
- 2C—60 to 66 inches; extremely gravelly loam

Rubble land

Composition: 20 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Hiore

- Steep slopes
- Erodible surface

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

**51VH2—Libeg-Copenhaver families-Rubble land complex,
steep ridges and mountain slopes**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely cobbly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

- A—0 to 7 inches; extremely cobbly sandy loam
- Bt—7 to 36 inches; extremely cobbly sandy clay loam
- BC—36 to 60 inches; extremely cobbly sandy loam

Copenhaver and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 5 inches; gravelly loam
- Bt—5 to 14 inches; very gravelly clay loam
- R—14 to 60 inches; bedrock

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Marcetta and similar soils: 10 percent

Management Considerations

Libeg

- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Marcetta

- Low bearing strength
- Surface compaction hazard

54B—Libeg channery loam, 2 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Toeslope on mountains

Slope: 2 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- A—0 to 7 inches; channery loam
- Bt1—7 to 19 inches; very channery clay loam
- Bt2—19 to 44 inches; very channery clay loam
- BC—44 to 60 inches; extremely channery loam

Additional Components

Copenhaver and similar soils: 5 percent

Finn and similar soils: 5 percent

Mollet and similar soils: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Finn

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mollet

- Low bearing strength
- Surface compaction hazard

54D—Libeg gravelly loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,700 to 7,500

Mean annual precipitation: 18 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A—0 to 14 inches; gravelly loam

Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent

Moderately Deep Soils and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Moderately Deep Soils

- Onsite required

Rock outcrop

- Nonsoil material

54E—Libeg gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,700 to 7,500

Mean annual precipitation: 18 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A—0 to 14 inches; gravelly loam

Bt—14 to 60 inches; very channery clay loam

Additional Components

Copenhaver and similar soils: 5 percent

Moderately Deep Soils and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Moderately Deep Soils

- Onsite required

Rock outcrop

- Nonsoil material

54Eg—Libeg channery loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- A—0 to 7 inches; channery loam
- Bt1—7 to 19 inches; very channery clay loam
- Bt2—19 to 44 inches; very channery clay loam
- BC—44 to 60 inches; extremely channery loam

Additional Components

Copenhaver and similar soils: 5 percent

Mollet and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Mollet

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

64GD1—Ovando-Blacklead families-Cryofluvents complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando, extremely bouldery and similar soils

Composition: 50 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Extremely bouldery sandy loam

Rock fragments on the soil surface:

- 0.10 to 3.00 percent stones, granite
- 3.00 to 15.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Alluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E1—1 to 5 inches; extremely bouldery sandy loam
- E2—5 to 11 inches; very bouldery loamy coarse sand
- E and Bt—11 to 60 inches; very bouldery loamy sand

Blacklead and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Alluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- A—0 to 4 inches; gravelly sandy loam
- A&Bw1—4 to 14 inches; very gravelly sandy loam

A&Bw2—14 to 41 inches; extremely gravelly sandy loam
R—41 to 60 inches; bedrock

Cryofluvents and similar soils

Composition: 15 percent

Taxonomic class: Cryofluvents

Landform: Flood plains

Slope: 0 to 10 percent

Native plant cover type: Forestland

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium derived from granite

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

A—0 to 2 inches; sandy loam

C1—2 to 9 inches; sandy loam

C2—9 to 36 inches; sandy loam

2C—36 to 60 inches; very gravelly loamy sand

Additional Components

Water: 10 percent

Management Considerations

Ovando, extremely bouldery

- None

Blackleed

- None

Cryofluvents

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Water

- Nonsoil material

64GJ1—Cryofluvents-Finn family-Water complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use wet shrublands and meadows

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,700

Mean annual precipitation: 15 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Cryofluvents and similar soils

Composition: 55 percent

Taxonomic class: Cryofluvents

Soil Survey of Deerlodge National Forest Area, Montana

Landform: Flood plains
Slope: 0 to 10 percent
Native plant cover type: Forestland
Surface layer texture: Sandy loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium derived from granite
Flooding: Occasional
Water table: Present
Available water capacity to 60-inch depth: Approximately 6.1 inches
Typical profile:
A—0 to 2 inches; sandy loam
C1—2 to 9 inches; sandy loam
C2—9 to 36 inches; sandy loam
2C—36 to 60 inches; very gravelly loamy sand

Finn and similar soils

Composition: 30 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 10 percent
Native plant cover type: Forestland
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Alluvium derived from granite
Flooding: Frequent
Water table: Present
Available water capacity to 60-inch depth: Approximately 5.8 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
A—1 to 11 inches; gravelly loam
Bw1—11 to 17 inches; very gravelly loam
Bw2—17 to 23 inches; very gravelly sandy clay loam
BC—23 to 60 inches; very cobbly sandy clay loam

Water

Composition: 15 percent
Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.
Landform: None assigned

Management Considerations

Cryofluvents

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

64UC2—Elve family-Cryofluvents-Water complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; very gravelly sandy loam

E—5 to 12 inches; very gravelly fine sandy loam

Bw1—12 to 28 inches; extremely gravelly fine sandy loam

Bw2—28 to 60 inches; extremely gravelly fine sandy loam

Cryofluvents and similar soils

Composition: 15 percent

Taxonomic class: Cryofluvents

Landform: Flood plains

Slope: 0 to 10 percent

Native plant cover type: Forestland

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium derived from mixed

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- A—0 to 2 inches; sandy loam
- C1—2 to 9 inches; sandy loam
- C2—9 to 36 inches; sandy loam
- 2C—36 to 60 inches; very gravelly loamy sand

Water

Composition: 10 percent

Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.

Landform: None assigned

Additional Components

Lowder and similar soils: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Elve

- None

Cryofluvents

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Water

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

64UCF—Wildgen-Mccabe-Yreka families, complex, rolling stream terraces and flood plains

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Wildgen and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 6 inches; cobbly loam
- E—6 to 17 inches; very gravelly loam
- E and Bt—17 to 60 inches; very gravelly loam

Mccabe and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Aeric Fluvaquents

Landform: Flood plains

Slope: 0 to 20 percent, southwest to southeast aspects

Native plant cover type: Forestland

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium derived from sandstone and shale

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- A—0 to 2 inches; sandy loam
- C1—2 to 9 inches; fine sandy loam
- C2—9 to 36 inches; sandy loam
- 2C—36 to 60 inches; very gravelly loamy sand

Yreka and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

E—0 to 12 inches; gravelly loam

E/Bt—12 to 18 inches; gravelly loam

Bt—18 to 60 inches; very gravelly clay loam

Additional Components

Water: 5 percent

Management Considerations

Wildgen

- Low bearing strength
- Surface compaction hazard

Mccabe

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Yreka

- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

64UF2—Elve-Finn families-Water complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use wet forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Spruce/twinflower

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; very gravelly sandy loam
- E—5 to 12 inches; very gravelly fine sandy loam
- Bw1—12 to 28 inches; extremely gravelly fine sandy loam
- Bw2—28 to 60 inches; extremely gravelly fine sandy loam

Finn and similar soils

- Composition:* 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 0 to 10 percent
Native plant cover type: Forestland
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Alluvium derived from sandstone and shale
Flooding: Frequent
Water table: Present
Available water capacity to 60-inch depth: Approximately 5.8 inches
- Typical profile:*
- Oi—0 to 1 inches; slightly decomposed plant material
 - A—1 to 11 inches; gravelly loam
 - Bw1—11 to 17 inches; very gravelly loam
 - Bw2—17 to 23 inches; very gravelly sandy clay loam
 - BC—23 to 60 inches; very cobbly sandy clay loam

Water

- Composition:* 10 percent
Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.
Landform: None assigned

Additional Components

- Cryofluvents and similar soils: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve

- None

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

Cryofluvents

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Worock

- Low bearing strength
- Surface compaction hazard

64UH2—Libeg-Sebud-Finn families, complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 22 inches; very gravelly clay loam
- Bt2—22 to 60 inches; very gravelly loam

Sebud and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

- A—0 to 14 inches; gravelly loam
- Bw—14 to 30 inches; very gravelly loam
- BC—30 to 60 inches; very cobbly loam

Finn and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform: Flood plains

Slope: 0 to 10 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 11 inches; gravelly loam
- Bw1—11 to 17 inches; very gravelly loam
- Bw2—17 to 23 inches; very gravelly sandy clay loam
- BC—23 to 60 inches; very cobbly sandy clay loam

Additional Components

Marcetta and similar soils: 5 percent

Redchief and similar soils: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Sebud

- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Redchief

- Low bearing strength
- Surface compaction hazard

64UHF—Braziel-Perma-McCabe families, complex, rolling stream terraces and flood plains

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly clay loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Perma and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- mountainbase on mountain slopes
- stream terraces

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- A—0 to 12 inches; gravelly loam
- Bw—12 to 36 inches; very gravelly sandy loam
- BC—36 to 60 inches; extremely gravelly loamy sand

Mccabe and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Aeric Fluvaquents

Landform: Flood plains

Slope: 0 to 10 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium derived from sandstone and shale

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

A—0 to 2 inches; sandy loam

C1—2 to 9 inches; fine sandy loam

C2—9 to 36 inches; sandy loam

2C—36 to 60 inches; very gravelly loamy sand

Additional Components

Shawmut and similar soils: 10 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Mccabe

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Shawmut

- Low bearing strength
- Surface compaction hazard

64UJ1—Finn-Lowder-Dunkleber families, complex, stream terraces and flood plains

Interpretive focus: Multiple-use wet shrublands and meadows

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Finn and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- drainageways
- flood plains

Slope: 0 to 10 percent

Native plant cover type: Forestland

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium derived from sandstone and shale

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 11 inches; gravelly loam

Bw1—11 to 17 inches; very gravelly loam

Bw2—17 to 23 inches; very gravelly sandy clay loam

BC—23 to 60 inches; very cobbly sandy clay loam

Lowder and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Landform:

- drainageways
- flood plains

Slope: 2 to 20 percent

Native plant cover type: Forestland

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium derived from sandstone and siltstone

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bg—7 to 33 inches; very cobbly sandy clay loam

BCg—33 to 60 inches; very gravelly sandy loam

Dunkleber and similar soils

Composition: 15 percent

Taxonomic class: Euic Typic Cryofibrists

Landform:

- drainageways
- flood plains

Slope: 0 to 10 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium derived from sandstone and siltstone

Flooding: Rare

Water table: Present

Ponding duration: Long

Available water capacity to 60-inch depth: Approximately 13.8 inches

Typical profile:

Oi1—0 to 12 inches; mucky peat

Oi2—12 to 60 inches; mucky peat

Management Considerations

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

68D—Phillcher gravelly ashy silt loam, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,000 to 8,720

Mean annual precipitation: 26 to 40 inches

Frost-free period: 20 to 70 days

Component Description

Phillcher and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Entrocrypts

Landform: Mountaintop on mountain slopes

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

Bw1—3 to 10 inches; gravelly ashy silt loam

2Bw2—10 to 26 inches; very gravelly sandy loam
2C—26 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Holloway and similar soils: 5 percent

Management Considerations

Phillcher

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

68E—Phillcher gravelly ashy silt loam, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,000 to 8,720
Mean annual precipitation: 26 to 40 inches
Frost-free period: 20 to 70 days

Component Description

Phillcher and similar soils

Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts
Landform: Mountaintop on mountain slopes
Slope: 15 to 45 percent
Native plant cover type: Forestland
Habitat type(s): Subalpine fir/grouse whortleberry
Surface layer texture: Gravelly ashy silt loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Volcanic ash over gravelly colluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 3.6 inches
Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- Oe—1 to 3 inches; moderately decomposed plant material
- Bw1—3 to 10 inches; gravelly ashy silt loam
- 2Bw2—10 to 26 inches; very gravelly sandy loam
- 2C—26 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 10 percent
Holloway and similar soils: 5 percent

Management Considerations

Phillcher

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

71CA3—Whitore-Hanson-Tropal families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 40 to 70 days

Component Description

Whitore and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/common juniper

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; very channery loam

Bk—8 to 60 inches; extremely cobbly loam

Hanson and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bk1—8 to 14 inches; very gravelly loam
- Bk2—14 to 60 inches; very gravelly loam

Tropal and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/common juniper
- Douglas-fir/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; stony loam
- Bk1—4 to 13 inches; extremely gravelly loam
- Bk2—13 to 18 inches; extremely gravelly loam
- R—18 to 60 inches; bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tropal

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

71CAF—Whitecow-Windham-Repp families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform: Mountain slopes

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/common juniper

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

A—0 to 3 inches; very gravelly loam

Bk1—3 to 30 inches; very gravelly loam

Bk2—30 to 60 inches; extremely gravelly loam

Windham and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcistolls

Landform: Mountain slopes

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/common juniper

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Colluvium derived from limestone

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Bk1—6 to 12 inches; gravelly loam
- Bk2—12 to 60 inches; very gravelly loam

Repp and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustepts

Landform: Mountain slopes

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/common juniper

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 12 inches; gravelly loam
- Bk1—12 to 24 inches; very gravelly loam
- Bk2—24 to 60 inches; extremely gravelly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Windham

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Repp

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

71CB3—Helmville-Whitore-Garlet families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,200

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Helmville and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillaceous limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; channery loam

Bt1—10 to 14 inches; very cobbly clay loam

Bt2—14 to 25 inches; very cobbly clay loam

Bk—25 to 60 inches; very cobbly clay loam

Whitore and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; channery loam

Bk—8 to 60 inches; extremely cobbly loam

Garlet and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw\E—19 to 46 inches; very cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Additional Components

Elvick and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

71CB4—Whitore family-Rock outcrop-Tropal family, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,200

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; channery loam

Bk—8 to 60 inches; extremely cobbly loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Tropal and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; very gravelly loam

Bk1—4 to 13 inches; extremely gravelly loam

Bk2—13 to 18 inches; extremely gravelly loam

R—18 to 60 inches; bedrock

Additional Components

Hanson and similar soils: 10 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tropal

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71CC3—Helmville-Garlet families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Helmville and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower
- Douglas-fir/ninebark

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillaceous limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; channery loam

Bt1—10 to 14 inches; very cobbly clay loam

Bt2—14 to 25 inches; very cobbly clay loam

Bk—25 to 60 inches; very cobbly clay loam

Garlet and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower
- Douglas-fir/ninebark

Surface layer texture: Very channery sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

E1—0 to 4 inches; very channery sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw\E—19 to 46 inches; very cobbly sandy clay loam

Bk—46 to 70 inches; extremely cobbly loam

Additional Components

Elvick and similar soils: 10 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71CC4—Whitore family-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- O_i—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; channery loam
- B_k—8 to 60 inches; extremely cobbly loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rumsey and similar soils: 10 percent

Tropal and similar soils: 10 percent

Hanson and similar soils: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tropal

- Steep slopes
- Erodible surface

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71CD3—Whitore-Dryadine families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Whitore and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 3 inches; cobbly loam
- Bw—3 to 8 inches; stony loam
- Bk—8 to 60 inches; very stony loam

Dryadine and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry

Soil Survey of Deerlodge National Forest Area, Montana

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Flaggy silt loam

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillaceous limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

- A—0 to 3 inches; flaggy silt loam
- Bw—3 to 12 inches; extremely flaggy silt loam
- Bk—12 to 34 inches; extremely flaggy silt loam
- R—34 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rumsey and similar soils: 10 percent

Maxville and similar soils: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Dryadine

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rumsey

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Maxville

- Low bearing strength
- Surface compaction hazard

71CH3—Hanson-Tiban families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Hanson and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A1—0 to 8 inches; very gravelly loam

A2—8 to 14 inches; very gravelly loam

Bk—14 to 60 inches; very gravelly loam

Tiban and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A—0 to 4 inches; gravelly loam

Bw—4 to 13 inches; very stony loam

Bk1—13 to 23 inches; very gravelly clay loam

Bk2—23 to 60 inches; very gravelly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Levengood and similar soils: 10 percent

Management Considerations

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tiban

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Levengood

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71GA4—Rubick-Comad families-Rubble land complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 40 to 70 days

Component Description

Rubick, very bouldery and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

E1—0 to 3 inches; cobbly coarse sandy loam

E2—3 to 8 inches; very cobbly coarse sandy loam

Bw—8 to 27 inches; very stony coarse sandy loam

BC—27 to 60 inches; extremely stony loamy coarse sand

Comad, extremely bouldery and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very stony sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

E1—0 to 5 inches; very stony sandy loam

E2—5 to 17 inches; extremely stony loamy sand

E&Bt1—17 to 30 inches; extremely stony sand

E&Bt2—30 to 60 inches; extremely stony sand

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Kurrie and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Rubick, very bouldery

- Steep slopes
- Erodible surface

Comad, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

Kurrie

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

**71GC4—Rubick-Ovando families-Rock outcrop complex,
high relief mountain slopes and ridges**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Rubick, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

E1—0 to 3 inches; cobbly coarse sandy loam

E2—3 to 8 inches; very cobbly coarse sandy loam

Bw—8 to 27 inches; very stony coarse sandy loam

BC—27 to 60 inches; extremely stony loamy coarse sand

Ovando, extremely bouldery and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very stony sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E1—1 to 6 inches; very stony sandy loam

E2—6 to 17 inches; very stony loamy coarse sand

E and Bt—17 to 35 inches; very stony loamy sand

C—35 to 60 inches; extremely stony loamy sand

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Kurrie and similar soils: 10 percent

Rubble land: 5 percent

Management Considerations

Rubick, very stony

- Steep slopes
- Erodible surface

Ovando, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Kurrie

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

71GD4—Blacklead-Ovando-Kurrie families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Blacklead, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Somewhat excessively drained

Parent material: Colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

A—0 to 3 inches; cobbly coarse sandy loam

A&Bw1—3 to 8 inches; very cobbly coarse sandy loam

A&Bw2—8 to 27 inches; very stony coarse sandy loam

R—27 to 60 inches; bedrock

Ovando, extremely bouldery and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Very stony sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E1—1 to 6 inches; very stony sandy loam

E2—6 to 17 inches; very stony loamy coarse sand

E and Bt—17 to 35 inches; very stony loamy sand

C—35 to 60 inches; extremely stony loamy sand

Kurrie and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

A—0 to 4 inches; coarse sandy loam

E/Bt—4 to 23 inches; very cobbly sandy loam

Bt—23 to 41 inches; very cobbly sandy clay loam

BC—41 to 46 inches; very gravelly sandy loam

Cr—46 to 60 inches; bedrock

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Blackleed, very stony

- Steep slopes
- Erodible surface

Ovando, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Kurrie

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

71LB3—Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Torpy and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; ashy loam

E—4 to 9 inches; cobbly ashy loam

Bw—9 to 35 inches; very cobbly loam

BC—35 to 60 inches; very cobbly loam

Vitroff and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from tuff breccia and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Illiano and similar soils

Composition: 15 percent

Taxonomic class: Ashy-skeletal, glassy Lithic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Surface layer texture: Very flaggy ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from rhyolite and/or tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 6 inches; very flaggy ashy sandy loam

Bw—6 to 15 inches; very flaggy ashy sandy loam

R—15 to 60 inches; bedrock

Additional Components

Figaro and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Vitroff

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Illiano

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Figaro

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

71LC3—Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges, moist

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 60 days

Component Description

Torpy and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/blue huckleberry

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; ashy loam

Soil Survey of Deerlodge National Forest Area, Montana

E—4 to 9 inches; cobbly ashy loam
Bw—9 to 35 inches; very cobbly loam
BC—35 to 60 inches; very cobbly loam

Vitroff and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from tuff breccia and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Illiano and similar soils

Composition: 15 percent

Taxonomic class: Ashy-skeletal, glassy Lithic Eutrocryepts

Landform:

- nose slope backslope on mountain slopes
- head slope shoulder on mountain slopes
- nose slope shoulder on mountain slopes
- head slope backslope on mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Surface layer texture: Very flaggy ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from rhyolite and/or tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 6 inches; very flaggy ashy sandy loam

Bw—6 to 15 inches; very flaggy ashy sandy loam

R—15 to 60 inches; bedrock

Additional Components

Figaro and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Vitroff

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Illiano

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Figaro

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

71LD3—Torpy-Vitroff-Illiano families, complex, high relief mountain slopes and ridges, cool

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Torpy and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; ashy loam
- E—4 to 9 inches; cobbly ashy loam
- Bw—9 to 35 inches; very cobbly loam
- BC—35 to 60 inches; very cobbly loam

Vitroff and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from tuff breccia and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 9 inches; ashy loam
- Bt&E—9 to 16 inches; ashy clay loam
- Bt—16 to 34 inches; gravelly ashy clay loam
- BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Illiano and similar soils

Composition: 15 percent

Taxonomic class: Ashy-skeletal, glassy Lithic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass
- Douglas-fir/twinflower

Surface layer texture: Very flaggy ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from rhyolite and/or tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 6 inches; very flaggy ashy sandy loam
- Bw—6 to 15 inches; very flaggy ashy sandy loam
- R—15 to 60 inches; bedrock

Additional Components

Figaro and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Vitroff

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Illiano

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Figaro

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

71NA3—Elve-Rock outcrop-Gambler families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw1—23 to 38 inches; very gravelly sandy loam

Bw2—38 to 60 inches; extremely gravelly sandy loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Gambler and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite and/or tuff and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Additional Components

Sebud and similar soils: 10 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71NB3—Elve-Evaro-Elvick families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass-kinnikinnick phase
- Douglas-fir/pinegrass

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw1—23 to 38 inches; very gravelly sandy loam

Bw2—38 to 60 inches; extremely gravelly sandy loam

Evaro and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; gravelly ashy loam

Bw—5 to 8 inches; gravelly ashy loam

Soil Survey of Deerlodge National Forest Area, Montana

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform: Drainageways

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- spruce/queencup beadlily
- spruce/twinflower

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium derived from quartzite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Rubble land: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

71NC3—Evaro family-Rubble land complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,500

Mean annual precipitation: 20 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Evavo and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/ninebark
- Douglas-fir/twinflower

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly ashy loam
- Bw—5 to 8 inches; gravelly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Elvick and similar soils: 5 percent

Holloway and similar soils: 5 percent

Rock outcrop: 5 percent

Tigeron and similar soils: 5 percent

Management Considerations

Evavo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71NCB—Evaro-Holloway-Tigeron families, complex, nivalational mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Evaro and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Cobbly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; cobbly ashy loam

Bw—5 to 8 inches; very cobbly ashy loam

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Holloway and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 19 inches; very gravelly loam
- 2E&Bt—19 to 54 inches; extremely gravelly sandy loam
- 2C—54 to 60 inches; extremely gravelly sandy loam

Tigeron and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- draws
- mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- E—0 to 7 inches; very channery loam
- Bt&E—7 to 13 inches; very gravelly loam
- Bt—13 to 60 inches; extremely gravelly clay loam
- 2C—60 to 66 inches; extremely gravelly loam

Additional Components

Elvick and similar soils: 10 percent

Rock outcrop: 10 percent

Rubble land: 5 percent

Management Considerations

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Steep slopes
- Erodible surface

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

71ND3—Evaro-Holloway-Elvick families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 8,090

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Evaro and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very channery ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; very channery ashy loam

Bw—5 to 8 inches; very cobbly ashy loam

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Holloway and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Haplocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Channery ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

Bw—2 to 12 inches; channery ashy silt loam

2E—12 to 19 inches; very gravelly loam

2E&Bt—19 to 54 inches; extremely gravelly sandy loam

2C—54 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Haplocryepts

Landform:

- drainageways
- toeslope on draws

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/queencup beadlily

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium derived from quartzite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Rubble land: 5 percent

Management Considerations

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

71NDB—Evapo-Holloway-Elvick families, complex, nivalational mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 24 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Evapo and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly ashy loam
- Bw—5 to 8 inches; gravelly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Holloway and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform: Mountain slopes

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Volcanic ash over colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Bw—2 to 12 inches; gravelly ashy silt loam
- 2E—12 to 19 inches; very gravelly loam
- 2E&Bt—19 to 54 inches; extremely gravelly sandy loam
- 2C—54 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- drainageways
- toeslope on draws

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/queencup beadlily

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium derived from quartzite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- E1—0 to 7 inches; very cobbly loam
- E2—7 to 18 inches; very cobbly loam
- Bw—18 to 38 inches; very cobbly sandy loam
- BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Rock outcrop: 10 percent

Tigeron and similar soils: 10 percent

Management Considerations

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71NH2—Sebud-Libeg families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 9,220

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- A—0 to 14 inches; gravelly loam
- Bw—14 to 30 inches; very gravelly loam
- BC—30 to 60 inches; very cobbly loam

Libeg and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 6 inches; cobbly loam
- Bt1—6 to 16 inches; very channery loam
- Bt2—16 to 30 inches; very channery sandy clay loam
- BC—30 to 60 inches; extremely stony sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rubble land: 10 percent

Marcetta and similar soils: 5 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Marcetta

- Low bearing strength
- Surface compaction hazard

71UA3—Elve-Gambler families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 40 to 70 days

Component Description

Elve and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw—23 to 38 inches; very gravelly sandy loam

BC—38 to 60 inches; extremely gravelly sandy loam

Gambler and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/Idaho fescue

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite and/or tuff and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Sebud and similar soils: 10 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71UAF—Winkler family-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 25 to 70 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- A—0 to 3 inches; very gravelly loam
- E—3 to 13 inches; very gravelly sandy loam
- E and Bt—13 to 60 inches; extremely gravelly fine sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Perma and similar soils: 10 percent

Yreka and similar soils: 10 percent

Management Considerations

Winkler

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Perma

- Steep slopes
- Erodible surface
- Low bearing strength

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71UC3—Garlet-Gambler-Worock families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Garlet and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/ninebark
- Douglas-fir/twinflower

Surface layer texture: Gravelly sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 60 inches; very cobbly loam

Gambler and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/ninebark
- Douglas-fir/twinflower

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite and/or tuff and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Worock and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/ninebark
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Elvick and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

71UCF—Winkler-Yreka families-Rock outcrop complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 25 to 70 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/ninebark
- Douglas-fir/twinflower

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A—0 to 3 inches; very gravelly loam

E—3 to 13 inches; very gravelly sandy loam

E and Bt—13 to 60 inches; extremely gravelly fine sandy loam

Yreka and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountain slopes

Slope: 25 to 70 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/ninebark
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

E—0 to 12 inches; gravelly loam

E/Bt—12 to 18 inches; gravelly loam

Bt—18 to 60 inches; very gravelly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Trapps and similar soils: 10 percent

Repp and similar soils: 5 percent

Management Considerations

Winkler

- Steep slopes
- Erodible surface

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Repp

- Steep slopes
- Erodible surface
- Low bearing strength

71UD3—Garlet-Worock families-Rock outcrop complex, high relief mountain slopes

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

E1—0 to 4 inches; gravelly sandy loam

E2—4 to 19 inches; very channery sandy loam

Bw/E—19 to 46 inches; very cobbly sandy clay loam

Bk—46 to 70 inches; extremely cobbly loam

Worock and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick and similar soils: 10 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

71UDB—Worock-Evaro-Elvick families, complex, nivalational mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Worock and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Evavo and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Stony ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; stony ashy loam

Bw—5 to 8 inches; stony ashy loam

2E—8 to 25 inches; very gravelly sandy loam

2E&Bt—25 to 60 inches; extremely gravelly sandy loam

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Haplocrypts

Landform:

- drainageways
- toeslope on draws

Slope: 0 to 20 percent

Native plant cover type: Forestland
Habitat type(s): Subalpine fir/queencup beadlily
Surface layer texture: Very bouldery loam
Depth to restrictive feature: None noted
Drainage class: Somewhat poorly drained
Parent material: Alluvium derived from sandstone and siltstone
Flooding: None
Water table: Present
Available water capacity to 60-inch depth: Approximately 3.4 inches
Typical profile:
E1—0 to 7 inches; very bouldery loam
E2—7 to 18 inches; very bouldery loam
Bw—18 to 38 inches; very cobbly sandy loam
BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Elve and similar soils: 5 percent
Rock outcrop: 5 percent

Management Considerations

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

71UH3—Sebud-Marcetta-Libeg families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland
Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500
Mean annual precipitation: 15 to 27 inches
Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

A—0 to 14 inches; gravelly loam

Bw1—14 to 30 inches; very gravelly loam

Bw2—30 to 60 inches; very gravelly loam

Marcetta and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

A1—0 to 10 inches; gravelly loam

A2—10 to 17 inches; very gravelly loam

AB—17 to 48 inches; very gravelly loam

C—48 to 60 inches; extremely gravelly loam

Libeg and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 6 inches; gravelly loam

Bt1—6 to 16 inches; very channery loam

Bt2—16 to 30 inches; very channery sandy clay loam

BC—30 to 60 inches; extremely stony sandy loam

Additional Components

Rock outcrop: 10 percent

Shawmut and similar soils: 5 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Marcetta

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Libeg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Shawmut

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71UHD—Redchief-Mollet-Sebud families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly loam

Bt1—10 to 18 inches; very gravelly clay loam

Bt2—18 to 28 inches; very gravelly clay

Bt3—28 to 60 inches; very gravelly clay

Mollet and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.8 inches

Typical profile:

A—0 to 10 inches; cobbly loam

Bt1—10 to 20 inches; cobbly clay loam

Bt2—20 to 26 inches; cobbly clay

Bt3—26 to 60 inches; cobbly clay loam

Sebud and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

A—0 to 14 inches; gravelly loam

Bw1—14 to 30 inches; very gravelly loam

Bw2—30 to 60 inches; very gravelly loam

Management Considerations

Redchief

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Mollet

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Sebud
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

71VA3—Elve-Gambler families-Rock outcrop complex, high relief mountain slopes and ridges, warm

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 40 to 70 days

Component Description

Elve and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw—23 to 38 inches; very gravelly sandy loam

BC—38 to 60 inches; extremely gravelly sandy loam

Gambler and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

E—0 to 12 inches; gravelly loam

E/Bt—12 to 18 inches; gravelly loam

Bt—18 to 60 inches; very gravelly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Libeg and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Libeg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

71VB3—Elve-Gambler families-Rubble land complex, high relief mountain slopes and ridges

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; very gravelly sandy loam

E—5 to 12 inches; very gravelly fine sandy loam

Bw1—12 to 28 inches; extremely gravelly fine sandy loam

Bw2—28 to 60 inches; extremely gravelly fine sandy loam

Gambler and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Rock outcrop: 10 percent

Cowood, very stony and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

Rock outcrop

- Nonsoil material

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

71VC3—Elve-Gambler families-Rock outcrop complex, high relief mountain slopes and ridges, moist

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/ninebark

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; very gravelly sandy loam

E—5 to 12 inches; very gravelly fine sandy loam

Bw1—12 to 28 inches; extremely gravelly fine sandy loam

Bw2—28 to 60 inches; extremely gravelly fine sandy loam

Gambler and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/ninebark
- Douglas-fir/blue huckleberry

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rubble land: 10 percent

Cowood, very stony and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

71VD3—Garlet-Worock families-Rock outcrop complex, high relief volcanic mountain slopes

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Garlet and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocrypts

Landform: Mountain slopes

Slope: 25 to 50 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw/E—19 to 60 inches; very cobbly loam

Worock and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 7 inches; gravelly loam
- E/Bt—7 to 19 inches; gravelly loam
- Bt—19 to 29 inches; very gravelly sandy clay loam
- BC—29 to 60 inches; very gravelly sandy clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Rubble land: 10 percent

Cowood, very stony and similar soils: 5 percent

Management Considerations

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

71VH3—Libeg-Sebud-Copenhaver families, complex, high relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt1—8 to 22 inches; very gravelly loam

Bt2—22 to 60 inches; very gravelly loam

Sebud and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

A—0 to 10 inches; cobbly loam

Bw1—10 to 44 inches; very gravelly loam

Bw2—44 to 60 inches; very gravelly sandy clay loam

Copenhaver and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 0 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

A—0 to 5 inches; gravelly loam

Bt—5 to 14 inches; very gravelly clay loam

R—14 to 60 inches; bedrock

Additional Components

Marcetta and similar soils: 10 percent

Management Considerations

Libeg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Marcetta

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75CC2—Helmville-Relyea-Whitorea families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Helmville and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 10 inches; cobbly loam
- Bt1—10 to 14 inches; very cobbly clay loam
- Bt2—14 to 25 inches; very cobbly clay loam
- Bk—25 to 60 inches; very cobbly clay loam

Relyea and similar soils

Composition: 30 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- E—0 to 3 inches; gravelly loam
- Bt/E—3 to 6 inches; very gravelly clay loam
- Bt—6 to 15 inches; very gravelly clay
- Btk—15 to 28 inches; very gravelly clay loam
- Bk—28 to 60 inches; extremely cobbly loam

Whitore and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Very channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; very channery loam
- Bk—8 to 60 inches; extremely cobbly loam

Additional Components

Rock outcrop: 10 percent

Management Considerations

Helmville

- Low bearing strength
- Surface compaction hazard

Relyea

- Low bearing strength
- Surface compaction hazard

Whitore

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75CH3—Tiban-Hanson-Levengood families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bw—4 to 13 inches; very stony loam
- Bk1—13 to 23 inches; very gravelly clay loam
- Bk2—23 to 60 inches; very gravelly clay loam

Hanson and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- A1—0 to 8 inches; very gravelly loam
- A2—8 to 14 inches; very gravelly loam
- Bk—14 to 60 inches; very gravelly loam

Levengood and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls

Landform:

- mountain slopes
- swales

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Bw—6 to 12 inches; very gravelly loam
- Bk1—12 to 19 inches; very gravelly loam
- Bk2—19 to 30 inches; very gravelly loam
- Bk3—30 to 60 inches; very cobbly loam

Starley and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 7 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 9 inches; gravelly loam
- Bk1—9 to 12 inches; extremely cobbly loam
- Bk2—12 to 15 inches; very cobbly loam
- R—15 to 60 inches; bedrock

Management Considerations

Tiban

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Levengood

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Starley

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

75DCD—Loberg-Danaher-Elvick families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils

Composition: 45 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower
- spruce/twinflower

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- E—0 to 12 inches; cobbly loam
- Bt/E—12 to 20 inches; very cobbly loam
- Bt1—20 to 49 inches; very cobbly clay
- Bt2—49 to 66 inches; very cobbly clay
- BC—66 to 72 inches; very cobbly clay loam

Danaher and similar soils

Composition: 25 percent

Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; gravelly loam

E/Bt—8 to 13 inches; clay loam

Bt—13 to 60 inches; gravelly clay

Elvick and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Eutrocrypts

Landform:

- drainageways
- toeslope on draws

Slope: 0 to 10 percent

Native plant cover type: Forestland

Habitat type(s):

- spruce/queencup beadlily
- spruce/twinflower

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium derived from sandstone and siltstone

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

E1—0 to 7 inches; very cobbly loam

E2—7 to 18 inches; very cobbly loam

Bw—18 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Additional Components

Helmville and similar soils: 10 percent

Elve and similar soils: 5 percent

Management Considerations

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

Elve

- None

75GA2—Como-Windyridge-Caseypeak families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 50 to 70 days

Component Description

Como and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; gravelly sandy loam
- E/Bw—8 to 15 inches; very gravelly sandy loam
- BC—15 to 60 inches; very gravelly sand

Windyridge and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 5 inches; coarse sandy loam
- Bw—5 to 12 inches; gravelly loamy coarse sand
- Cr—12 to 60 inches; bedrock

Caseypeak, extremely stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Entrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very stony coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 6 inches; very stony coarse sandy loam
- Bw—6 to 17 inches; very gravelly sandy loam
- Cr—17 to 20 inches; bedrock
- R—20 to 60 inches; bedrock

Additional Components

Opitz and similar soils: 5 percent

Peeler and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Como

- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Windyridge

- Shallow soil
- Cutslope slumping
- Cutslope erosion

Caseypeak, extremely stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Opitz

- Low bearing strength

Peeler

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75GA3—Windyridge-Como-Caseypeak families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Windyridge and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 5 inches; coarse sandy loam
- Bw—5 to 12 inches; gravelly loamy coarse sand
- Cr—12 to 60 inches; bedrock

Como and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue
- Douglas-fir/elk sedge

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; gravelly sandy loam
- E/Bw—8 to 15 inches; very gravelly sandy loam
- BC—15 to 60 inches; very gravelly sand

Caseypeak, extremely stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very stony coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 6 inches; very stony coarse sandy loam
- Bw—6 to 17 inches; very gravelly sandy loam
- Cr—17 to 20 inches; bedrock
- R—20 to 60 inches; bedrock

Additional Components

Opitz and similar soils: 10 percent
Rock outcrop: 10 percent
Peeler and similar soils: 5 percent
Rubble land: 5 percent

Management Considerations

Windyridge

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Como

- Steep slopes
- Erodible surface
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Caseypeak, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Opitz

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

Peeler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

75GAF—Ambrant-Rochester families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Ambrant, extremely bouldery and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 20 inches; gravelly coarse sandy loam
- E&Bt—20 to 39 inches; gravelly sandy loam
- 2C—39 to 60 inches; very gravelly coarse sand

Rochester, very stony and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very stony sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

- A—0 to 3 inches; very stony sandy loam
- C1—3 to 14 inches; very stony loamy sand
- C2—14 to 60 inches; very stony loamy sand

Additional Components

Rock outcrop: 10 percent

Rubble land: 5 percent

Management Considerations

Ambrant, extremely bouldery

- Steep slopes
- Erodible surface

Rochester, very stony

- Steep slopes
- Erodible surface
- Cutslope erosion

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

75GB2—Windyridge-Como-Hiore families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Windyridge and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 10 to 40 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/pinegrass

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 5 inches; coarse sandy loam
- Bw—5 to 12 inches; gravelly loamy coarse sand
- Cr—12 to 60 inches; bedrock

Como and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 10 to 40 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; gravelly sandy loam

E/Bw—8 to 15 inches; very gravelly sandy loam

BC—15 to 60 inches; very gravelly sand

Hiore, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 40 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A1—0 to 2 inches; gravelly coarse sandy loam

A2—2 to 7 inches; gravelly coarse sandy loam

Bw—7 to 35 inches; very gravelly loamy coarse sand

BC—35 to 60 inches; very gravelly loamy coarse sand

Additional Components

Caseypeak, bouldery and similar soils: 10 percent

Rock outcrop: 10 percent

Lowder and similar soils: 5 percent

Peeler and similar soils: 5 percent

Management Considerations

Windyridge

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Como

- Steep slopes
- Erodible surface
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Hiore, very bouldery

- Steep slopes
- Erodible surface

Caseypeak, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Peeler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75GB4—Windyridge family-Rock outcrop-Como family, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Windyridge and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 45 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Residuum weathered from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.0 inches
Typical profile:
A—0 to 5 inches; coarse sandy loam
Bw—5 to 12 inches; gravelly loamy coarse sand
Cr—12 to 60 inches; bedrock

Rock outcrop

Composition: 25 percent
Definition: Rock outcrop consists of exposures of bare bedrock.
Landform: None assigned

Como and similar soils

Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts
Landform:

- mountain slopes
- ridges

Slope: 45 to 70 percent
Native plant cover type: Forestland
Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Colluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 2.9 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
E—1 to 8 inches; gravelly sandy loam
E/Bw—8 to 15 inches; very gravelly sandy loam
BC—15 to 60 inches; very gravelly sand
Rubble land
Composition: 15 percent
Definition: Rubble land consists of areas of cobbles, stones, and boulders
Landform: None assigned

Additional Components

Caseypeak, extremely stony and similar soils: 5 percent

Management Considerations

Windyridge

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Como

- Steep slopes
- Erodible surface
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

Caseypeak, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

75GC2—Como-Kurrie-Hiore families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Como and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; gravelly sandy loam
- E/Bw—8 to 15 inches; very gravelly sandy loam
- BC—15 to 60 inches; very gravelly sand

Kurrie and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/dwarf huckleberry

Surface layer texture: Cobbly coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 58 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- A—0 to 4 inches; cobbly coarse sandy loam
- E/Bt—4 to 23 inches; very cobbly sandy loam
- Bt—23 to 41 inches; very cobbly sandy clay loam
- BC—41 to 46 inches; gravelly coarse sandy loam
- Cr—46 to 60 inches; bedrock

Hiore, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- A1—0 to 2 inches; gravelly coarse sandy loam
- A2—2 to 7 inches; gravelly coarse sandy loam
- Bw—7 to 35 inches; very gravelly loamy coarse sand
- BC—35 to 60 inches; very gravelly loamy coarse sand

Additional Components

Peeler and similar soils: 10 percent

Windyridge and similar soils: 10 percent

Lowder and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Como

- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Kurrie

- Low bearing strength
- Surface compaction hazard

Hiore, very bouldery

- None

Peeler

- Low bearing strength
- Surface compaction hazard

Windyridge

- Shallow soil
- Cutslope slumping
- Cutslope erosion

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75GC3—Como-Windyridge-Hiore families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Como and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Typic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 8 inches; gravelly sandy loam

E/Bw—8 to 15 inches; very gravelly sandy loam

BC—15 to 60 inches; very gravelly sand

Windyridge and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/pinegrass

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 5 inches; coarse sandy loam

Bw—5 to 12 inches; gravelly loamy coarse sand

Cr—12 to 60 inches; bedrock

Hiore, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A1—0 to 2 inches; gravelly coarse sandy loam

A2—2 to 7 inches; gravelly coarse sandy loam

Bw—7 to 35 inches; very gravelly loamy coarse sand

BC—35 to 60 inches; very gravelly loamy coarse sand

Additional Components

Kurrie and similar soils: 10 percent
Peeler and similar soils: 10 percent
Rock outcrop: 10 percent
Finn and similar soils: 5 percent

Management Considerations

Como

- Steep slopes
- Erodible surface
- Low bearing strength
- Cutslope slumping
- Cutslope erosion

Windyridge

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Hiore, very stony

- Steep slopes
- Erodible surface

Kurrie

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Peeler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

75GD1—Ovando-Goldflint-Blacklead families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Ovando and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E1—1 to 6 inches; stony sandy loam

E2—6 to 17 inches; very stony loamy coarse sand

E and Bt—17 to 35 inches; very stony loamy sand

C—35 to 60 inches; extremely stony loamy sand

Goldflint and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; coarse sandy loam

BC—6 to 13 inches; very gravelly coarse sand

R—13 to 60 inches; bedrock

Blackleed and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 0 to 20 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- subalpine fir/beargrass
- subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

A—0 to 4 inches; gravelly sandy loam

A&Bw1—4 to 14 inches; very gravelly sandy loam

A&Bw2—14 to 41 inches; extremely gravelly sandy loam

R—41 to 60 inches; bedrock

Additional Components

Lowder and similar soils: 10 percent

Rock outcrop: 10 percent

Elvick and similar soils: 5 percent

Warwood and similar soils: 5 percent

Management Considerations

Ovando

- None

Goldflint

- Shallow soil

Blackleed

- None

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Warwood

- Low bearing strength
- Surface compaction hazard

75GD2—Kurrie-Goldflint-Warwood families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 8,590

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Kurrie and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- subalpine fir/dwarf huckleberry
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry
- subalpine fir/beargrass

Surface layer texture: Very cobbly sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.8 inches

Typical profile:

- A—0 to 4 inches; very cobbly sandy loam
- E/Bt—4 to 23 inches; very cobbly sandy loam
- Bt—23 to 41 inches; very cobbly sandy clay loam
- BC—41 to 46 inches; very gravelly sandy loam
- Cr—46 to 60 inches; bedrock

Goldflint and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; coarse sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

BC—6 to 13 inches; very gravelly coarse sand

R—13 to 60 inches; bedrock

Warwood and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Eutric Glossocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.9 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

E—2 to 10 inches; loam

Bt/E—10 to 22 inches; sandy clay loam

Bt—22 to 40 inches; sandy clay loam

BC—40 to 62 inches; gravelly sandy clay loam

Additional Components

Rock outcrop: 10 percent

Lowder and similar soils: 5 percent

Ovando and similar soils: 5 percent

Management Considerations

Kurrie

- Low bearing strength
- Surface compaction hazard

Goldflint

- Shallow soil
- Cutslope slumping
- Cutslope erosion

Warwood

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Ovando

- Cutslope slumping
- Cutslope erosion

**75GD4—Goldflint family-Rock outcrop-Ovando family,
complex, low relief mountain slopes and ridges**

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 60 days

Component Description

Goldflint and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- lodgepole pine/pinegrass
- lodgepole pine/grouse whortleberry
- subalpine fir/grouse whortleberry

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; coarse sandy loam
- BC—6 to 13 inches; very gravelly coarse sand
- R—13 to 60 inches; bedrock

Rock outcrop

Composition: 25 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Ovando, extremely bouldery and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- mountain slopes
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very stony sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E1—1 to 6 inches; very stony sandy loam

E2—6 to 17 inches; very stony loamy coarse sand

E and Bt—17 to 35 inches; very stony loamy sand

C—35 to 60 inches; extremely stony loamy sand

Rubble land

Composition: 15 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Additional Components

Caseypeak, extremely stony and similar soils: 5 percent

Management Considerations

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Ovando, extremely bouldery

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

Caseypeak, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

75GEB—Leighcan-Kurrie-Jeru families, complex, nivalational mountain slopes and ridges

Interpretive focus: High-elevation resource areas

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 7,700 to 10,000

Mean annual precipitation: 28 to 40 inches

Frost-free period: 20 to 40 days

Component Description

Leighcan, very bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

E—0 to 4 inches; gravelly sandy loam

Bw1—4 to 9 inches; very gravelly sandy loam

Bw2—9 to 60 inches; extremely gravelly sandy loam

Kurrie and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- draws
- mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Stony sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 58 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- A—0 to 4 inches; stony sandy loam
- E/Bt—4 to 23 inches; very cobbly sandy loam
- Bt—23 to 41 inches; very cobbly sandy clay loam
- BC—41 to 46 inches; gravelly coarse sandy loam
- Cr—46 to 60 inches; bedrock

Jeru, extremely bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/smooth woodrush
- whitebark pine-subalpine fir
- alpine larch-subalpine fir
- whitebark pine

Surface layer texture: Bouldery ashy loam

Rock fragments on the soil surface: 3 to 15 percent boulders, granite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- A—0 to 4 inches; bouldery ashy loam
- Bw—4 to 32 inches; very cobbly sandy loam
- BC—32 to 60 inches; very cobbly sandy loam

Additional Components

Elvick and similar soils: 10 percent

Finn and similar soils: 5 percent

Rock outcrop: 3 percent

Rubble land: 2 percent

Management Considerations

Leighcan, very bouldery

- Steep slopes
- Erodible surface

Kurrie

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Jeru, extremely bouldery

- Steep slopes
- Erodible surface
- Surface boulders
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

75GH2—Opitz-Bavdark-Marcetta families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Opitz and similar soils

Composition: 45 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Coarse-loamy colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

- A—0 to 10 inches; sandy loam
- Bt1—10 to 15 inches; gravelly sandy clay loam
- Bt2—15 to 22 inches; gravelly sandy loam
- BC—22 to 36 inches; gravelly loamy coarse sand
- Cr—36 to 57 inches; bedrock
- R—57 to 60 inches; bedrock

Bavdark and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Pachic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.1 inches

Typical profile:

- A—0 to 10 inches; coarse sandy loam
- AB—10 to 18 inches; coarse sandy loam
- Bt—18 to 42 inches; sandy clay loam
- C—42 to 60 inches; coarse sandy loam

Marcetta and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- mountain slopes
- swales

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

- A1—0 to 10 inches; gravelly loam
- A2—10 to 17 inches; very gravelly loam
- AB—17 to 48 inches; very gravelly loam
- C—48 to 60 inches; extremely gravelly loam

Additional Components

Rubble land: 5 percent

Management Considerations

Opitz

- Low bearing strength

Bavdark

- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Rubble land

- Nonsoil material

75LB2—Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,500

Mean annual precipitation: 18 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Vitroff and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- backslope on mountain slopes
- footslope on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy alluvium and/or colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Torpy and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- shoulder on mountain slopes
- backslope on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/elk sedge

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; ashy loam
- E—4 to 9 inches; cobbly ashy loam
- Bw—9 to 35 inches; very cobbly loam
- BC—35 to 60 inches; very cobbly loam

Goosepeak and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- backslope on mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 7 inches; gravelly loam
- E/Bt—7 to 19 inches; gravelly loam
- Bt—19 to 29 inches; very gravelly sandy clay loam
- BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Lowder and similar soils: 10 percent

Figaro and similar soils: 5 percent

Illiano and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Vitroff

- Low bearing strength
- Surface compaction hazard

Torpy

- Low bearing strength

Goosepeak

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Figaro

- Low bearing strength
- Surface compaction hazard

Illiano

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75LC2—Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges, moist

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,500

Mean annual precipitation: 18 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Vitroff and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- backslope on mountain slopes
- footslope on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy alluvium and/or colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 9 inches; ashy loam
- Bt&E—9 to 16 inches; ashy clay loam
- Bt—16 to 34 inches; gravelly ashy clay loam
- BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Torpy and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- backslope on mountain slopes
- shoulder on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; ashy loam

E—4 to 9 inches; cobbly ashy loam

Bw—9 to 35 inches; very cobbly loam

BC—35 to 60 inches; very cobbly loam

Goosepeak and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Lowder and similar soils: 10 percent

Figaro and similar soils: 5 percent

Illiano and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Vitroff

- Low bearing strength
- Surface compaction hazard

Torpy

- Low bearing strength

Goosepeak

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Figaro

- Low bearing strength
- Surface compaction hazard

Illiano

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75LD2—Vitroff-Torpy-Goosepeak families, complex, low relief mountain slopes and ridges, cool

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,500

Mean annual precipitation: 18 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Vitroff and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- footslope on mountain slopes
- backslope on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy alluvium and/or colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 9 inches; ashy loam

Bt&E—9 to 16 inches; ashy clay loam

Bt—16 to 34 inches; gravelly ashy clay loam

BC—34 to 60 inches; very gravelly ashy coarse sandy loam

Torpy and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- shoulder on mountain slopes
- backslope on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; ashy loam
- E—4 to 9 inches; cobbly ashy loam
- Bw—9 to 35 inches; very cobbly loam
- BC—35 to 60 inches; very cobbly loam

Goosepeak and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- backslope on mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from tuff breccia

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 7 inches; gravelly loam
- E/Bt—7 to 19 inches; gravelly loam
- Bt—19 to 29 inches; very gravelly sandy clay loam
- BC—29 to 60 inches; very gravelly sandy clay loam

Additional Components

Lowder and similar soils: 10 percent

Figaro and similar soils: 5 percent

Illiano and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Vitroff

- Low bearing strength
- Surface compaction hazard

Torpy

- Low bearing strength

Goosepeak

- Low bearing strength
- Surface compaction hazard

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Figaro

- Low bearing strength
- Surface compaction hazard

Illiano

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75UAF—Winkler-Perma-Yreka families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A—0 to 3 inches; gravelly loam

E—3 to 13 inches; very gravelly sandy loam

E and Bt—13 to 60 inches; extremely gravelly fine sandy loam

Perma and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

A—0 to 12 inches; very cobbly loam

Bw—12 to 36 inches; very gravelly sandy loam

BC—36 to 60 inches; extremely gravelly loamy sand

Yreka and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

E—0 to 12 inches; gravelly loam

E/Bt—12 to 18 inches; gravelly loam

Bt—18 to 60 inches; very gravelly clay loam

Additional Components

Repp and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Winkler

- None

Perma

- Low bearing strength

Yreka

- Low bearing strength
- Surface compaction hazard

Repp

- Low bearing strength

Rock outcrop

- Nonsoil material

75UB2—Elve-Gambler families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw—23 to 38 inches; very gravelly sandy loam

BC—38 to 60 inches; extremely gravelly sandy loam

Gambler and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite and/or tuff and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

E—0 to 12 inches; loam

E/Bt—12 to 18 inches; gravelly loam

Bt1—18 to 20 inches; gravelly clay loam

Bt2—20 to 60 inches; very cobbly clay loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick and similar soils: 10 percent

Helmville and similar soils: 5 percent

Management Considerations

Elve

- None

Gambler

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

75UC2—Worock-Garlet-Elve families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 7 inches; gravelly loam
- E/Bt—7 to 19 inches; gravelly loam
- Bt—19 to 29 inches; very gravelly sandy clay loam
- BC—29 to 60 inches; very gravelly sandy clay loam

Garlet and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Eutrocryepts

Landform: Mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/blue huckleberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone, sandstone, and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- E1—0 to 4 inches; gravelly sandy loam
- E2—4 to 19 inches; very channery sandy loam
- Bw/E—19 to 46 inches; very cobbly sandy clay loam
- Bk—46 to 70 inches; extremely cobbly loam

Elve and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/dwarf huckleberry
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 4 inches; very gravelly loam
- E—4 to 23 inches; very gravelly sandy loam
- Bw—23 to 38 inches; very gravelly sandy loam
- BC—38 to 60 inches; extremely gravelly sandy loam

Additional Components

Elvick and similar soils: 10 percent

Helmville and similar soils: 5 percent

Loberg and similar soils: 3 percent

Rock outcrop: 2 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Garlet

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve

- None

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75UCF—Yreka-Winkler families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Yreka and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/blue huckleberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- E—0 to 12 inches; gravelly loam
- E/Bt—12 to 18 inches; gravelly loam
- Bt—18 to 60 inches; very gravelly clay loam

Winkler and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/blue huckleberry
- Douglas-fir/twinflower
- Douglas-fir/dwarf huckleberry

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- A—0 to 3 inches; very gravelly loam
- E—3 to 13 inches; very gravelly sandy loam
- E and Bt—13 to 60 inches; extremely gravelly fine sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Bignell and similar soils: 5 percent

Repp and similar soils: 5 percent

Trapps and similar soils: 5 percent

Management Considerations

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Winkler

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Repp

- Steep slopes
- Erodible surface
- Low bearing strength

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75UG3—Sebud-Libeg families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use shrubland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 7,000

Mean annual precipitation: 15 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- A—0 to 14 inches; gravelly loam
- Bw1—14 to 30 inches; very gravelly loam
- Bw2—30 to 60 inches; very gravelly loam

Libeg and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.4 inches

Typical profile:

- A—0 to 6 inches; very cobbly loam
- Bt1—6 to 16 inches; very channery loam
- Bt2—16 to 30 inches; very channery sandy clay loam
- BC—30 to 60 inches; extremely cobbly sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Marcetta and similar soils: 5 percent

Ratiopeak and similar soils: 5 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Libeg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Marcetta

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Ratiopeak

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75UH2—Ratiopeak-Cheadle-Marcetta families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Ratiopeak, stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 10 inches; gravelly loam
- Bt—10 to 35 inches; very gravelly clay loam
- Bk—35 to 60 inches; very gravelly loam

Cheadle and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountaintop summit on mountain slopes
- mountaintop shoulder on mountain slopes

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- A1—0 to 4 inches; channery loam
- A2—4 to 10 inches; very channery fine sandy loam
- Bk—10 to 18 inches; extremely flaggy fine sandy loam
- R—18 to 60 inches; bedrock

Marcetta and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- mountain slopes
- swales

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.3 inches

Typical profile:

- A1—0 to 10 inches; gravelly loam
- A2—10 to 17 inches; very gravelly loam
- AB—17 to 48 inches; very gravelly loam
- C—48 to 60 inches; extremely gravelly loam

Additional Components

Finn and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

Cheadle

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

Finn

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

75UHF—Perma-Braziel families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Perma and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from sandstone and shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

A—0 to 12 inches; very cobbly loam

Bw—12 to 36 inches; very gravelly sandy loam

BC—36 to 60 inches; extremely gravelly loamy sand

Braziel and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- mountain slopes
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 10 to 35 percent, southwest to southeast aspects
Native plant cover type: Forestland
Habitat type(s): None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from sandstone and shale
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.3 inches
Typical profile:
A—0 to 8 inches; gravelly loam
Bt1—8 to 17 inches; very gravelly clay loam
Bt2—17 to 43 inches; very gravelly clay loam
BC—43 to 60 inches; extremely gravelly loam

Rock outcrop

Composition: 15 percent
Definition: Rock outcrop consists of exposures of bare bedrock.
Landform: None assigned

Additional Components

Shawmut and similar soils: 5 percent
Winspect and similar soils: 5 percent

Management Considerations

Perma

- Low bearing strength

Braziel

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Shawmut

- Low bearing strength
- Surface compaction hazard

Winspect

- Low bearing strength
- Surface compaction hazard

75VA3—Elve-Vision families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest
Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000
Mean annual precipitation: 18 to 24 inches
Frost-free period: 70 to 90 days

Component Description

Elve and similar soils

Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 10 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw—23 to 38 inches; very gravelly sandy loam

BC—38 to 60 inches; extremely gravelly sandy loam

Vision and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

A—0 to 7 inches; gravelly loam

Bt1—7 to 12 inches; gravelly clay loam

Bt2—12 to 36 inches; very gravelly clay loam

BC—36 to 60 inches; extremely gravelly loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Hiore and similar soils: 10 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Vision

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Hiore

- Steep slopes
- Erodible surface

75VAF—Wildgen-Vision families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use open forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Wildgen and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- mountain slopes
- ridges

Slope: 10 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 6 inches; cobbly loam
- E—6 to 17 inches; very gravelly loam
- E and Bt—17 to 60 inches; very gravelly loam

Vision and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 50 percent, southwest to southeast aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/rough fescue
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

A—0 to 7 inches; gravelly loam

Bt1—7 to 12 inches; gravelly clay loam

Bt2—12 to 36 inches; very gravelly clay loam

BC—36 to 60 inches; extremely gravelly loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Trapps and similar soils: 5 percent

Management Considerations

Wildgen

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Vision

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75VB3—Worock-Elve families-Rock outcrop complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 6,000

Mean annual precipitation: 18 to 24 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 19 inches; stony loam

Bt—19 to 53 inches; very gravelly clay loam

BC—53 to 60 inches; very gravelly clay loam

Elve and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 17 inches; very cobbly loam

Bw—17 to 60 inches; extremely cobbly sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick and similar soils: 10 percent

Hiore and similar soils: 5 percent

Management Considerations

Worock

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Hiore

- Steep slopes
- Erodible surface

75VC3—Worock-Elve families-Rock outcrop complex, low relief mountain slopes and ridges, moist

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 5,000 to 6,500

Mean annual precipitation: 20 to 26 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly loam

Bt—19 to 29 inches; very gravelly sandy clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Elve and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/twinflower

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 4 inches; very gravelly loam
- E—4 to 23 inches; very gravelly sandy loam
- Bw—23 to 38 inches; very gravelly sandy loam
- BC—38 to 60 inches; extremely gravelly sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Loberg and similar soils: 5 percent

Management Considerations

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface

Rock outcrop

- Nonsoil material

Loberg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

75VD2—Worock-Elve families-Rock outcrop complex, low relief mountain slopes and ridges, cool

Interpretive focus: Multiple-use forest

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 6,000 to 7,700

Mean annual precipitation: 22 to 26 inches

Frost-free period: 30 to 60 days

Component Description

Worock and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 7 inches; gravelly loam
- E/Bt—7 to 19 inches; gravelly loam
- Bt—19 to 29 inches; very gravelly sandy clay loam
- BC—29 to 60 inches; very gravelly sandy clay loam

Elve and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/dwarf huckleberry
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry
- lodgepole pine/grouse whortleberry
- lodgepole pine/pinegrass

Surface layer texture: Very gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; very gravelly loam

E—4 to 23 inches; very gravelly sandy loam

Bw—23 to 38 inches; very gravelly sandy loam

BC—38 to 60 inches; extremely gravelly sandy loam

Rock outcrop

Composition: 15 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Elvick and similar soils: 10 percent

Loberg and similar soils: 5 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Elve

- None

Rock outcrop

- Nonsoil material

Elvick

- High water table
- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

75VH2—Libeg-Copenhaver families, complex, low relief mountain slopes and ridges

Interpretive focus: Multiple-use grassland

Field investigation intensity: Order 3

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 15 to 27 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 5 inches; loam

Bt1—5 to 15 inches; gravelly loam

Bt2—15 to 35 inches; very cobbly sandy clay loam

BC—35 to 60 inches; extremely cobbly sandy clay loam

Copenhaver and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- mountain slopes
- ridges

Slope: 10 to 35 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

A—0 to 5 inches; gravelly loam

Bt—5 to 14 inches; very gravelly clay loam

R—14 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Lowder and similar soils: 5 percent

Marcetta and similar soils: 5 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lowder

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Marcetta

- Low bearing strength
- Surface compaction hazard

76E—Tibson gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,200

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Calcicryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Bw—6 to 12 inches; very gravelly loam
- Bk1—12 to 24 inches; very gravelly clay loam
- Bk2—24 to 60 inches; very gravelly loam

Additional Components

Lap and similar soils: 5 percent

Levengood and similar soils: 5 percent

Maciver and similar soils: 5 percent

Management Considerations

Tibson

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Levengood

- Low bearing strength
- Surface compaction hazard

Maciver

- Low bearing strength
- Surface compaction hazard

80B—Elkner-Ovando complex, 2 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,600 to 6,200

Mean annual precipitation: 22 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Elkner and similar soils

Composition: 45 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform: Toeslope on mountains

Slope: 2 to 8 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass
- subalpine fir/blue huckleberry

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E1—3 to 11 inches; stony sandy loam

E2—11 to 18 inches; sandy loam

E and Bt—18 to 41 inches; coarse sandy loam

BC—41 to 60 inches; gravelly coarse sandy loam

Ovando and similar soils

Composition: 40 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Toeslope on mountains

Slope: 2 to 8 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass
- subalpine fir/blue huckleberry

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.8 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E1—3 to 9 inches; very stony sandy loam

E2—9 to 15 inches; very stony coarse sandy loam

E and Bt—15 to 28 inches; very stony loamy coarse sand

C—28 to 60 inches; extremely stony loamy coarse sand

Additional Components

Typic Eutrocryepts and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Elkner

- None

Ovando

- None

Typic Eutrocryepts

- None

Rock outcrop

- Nonsoil material

81E—Holloway gravelly silt loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 30 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Holloway and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: summit on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy silt loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from argillite and/or quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.5 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

A—3 to 12 inches; gravelly ashy silt loam

2E—12 to 26 inches; extremely gravelly sandy loam

2E and Bt—26 to 50 inches; extremely gravelly sandy loam

2C—50 to 60 inches; extremely gravelly sandy loam

Additional Components

Elve and similar soils: 5 percent

Evaro and similar soils: 5 percent

Rumsey and similar soils: 5 percent

Management Considerations

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Evaro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rumsey

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

82D—Elve gravelly loam, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- subalpine fir/mountain gooseberry
- subalpine fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 12 inches; gravelly loam
- Bw/E—12 to 25 inches; very gravelly loam
- BC—25 to 60 inches; very gravelly loam

Additional Components

Evoro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve

- Low bearing strength

Evoro

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

82E—Elve gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/mountain gooseberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E—3 to 12 inches; gravelly loam

Bw/E—12 to 25 inches; very gravelly loam

BC—25 to 60 inches; very gravelly loam

Additional Components

Evoro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve

- Low bearing strength

Evoro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

82F—Elve gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/mountain gooseberry
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 12 inches; gravelly loam
- Bw/E—12 to 25 inches; very gravelly loam
- BC—25 to 60 inches; very gravelly loam

Additional Components

Evoro and similar soils: 5 percent
Rock outcrop: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface
- Low bearing strength

Evoro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

83D—Crow clay loam, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 5,800

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Crow and similar soils

Composition: 85 percent

Taxonomic class: Fine, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountains

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase
- Douglas-fir/elk sedge

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; clay loam

Bt—11 to 31 inches; clay loam
BC—31 to 60 inches; sandy clay loam

Additional Components

Crow, greater slopes and similar soils: 15 percent

Management Considerations

Crow

- Low bearing strength
- Surface compaction hazard

Crow, greater slopes

- Low bearing strength
- Surface compaction hazard

83E—Crow clay loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 5,800

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Crow and similar soils

Composition: 85 percent

Taxonomic class: Fine, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase
- Douglas-fir/elk sedge

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.9 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; clay loam
- Bt—11 to 31 inches; clay loam
- BC—31 to 60 inches; sandy clay loam

Additional Components

Bignell and similar soils: 15 percent

Management Considerations

Crow

- Low bearing strength
- Surface compaction hazard

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

84E—Helmville cobbly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,600 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Helmville and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 10 inches; cobbly loam
- Bt1—10 to 14 inches; very cobbly clay loam
- Bt2—14 to 25 inches; very cobbly clay loam
- Bk—25 to 60 inches; very cobbly clay loam

Additional Components

Relyea and similar soils: 5 percent

Rock outcrop: 5 percent

Whitore and similar soils: 5 percent

Management Considerations

Helmville

- Low bearing strength
- Surface compaction hazard

Relyea

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Whitore

- Low bearing strength
- Surface compaction hazard

84F—Helmville cobbly loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,600 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Helmville and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 10 inches; cobbly loam
- Bt—10 to 14 inches; very cobbly clay loam
- Bk—14 to 60 inches; very cobbly clay loam

Additional Components

Relyea and similar soils: 5 percent

Rock outcrop: 5 percent

Whitore and similar soils: 5 percent

Management Considerations

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Relyea

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

85E—Loberg gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,600 to 7,500

Mean annual precipitation: 18 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Loberg and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 8 inches; gravelly loam
- E/Bt—8 to 14 inches; very cobbly clay loam
- Bt—14 to 60 inches; very cobbly clay

Additional Components

Danaher and similar soils: 5 percent

Worock and similar soils: 4 percent

Lowder and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

Lowder

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

86E—Winkler gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/elk sedge

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and B_t—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Low bearing strength

Rock outcrop

- Nonsoil material

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

86F—Winkler gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/elk sedge

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and Bt—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

Whitlash

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

87D—Danaher loam, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 22 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils

Composition: 85 percent

Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; loam
- Bt/E—6 to 13 inches; clay loam
- Bt—13 to 60 inches; clay loam

Additional Components

Foolhen and similar soils: 5 percent

Loberg and similar soils: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Danaher

- Low bearing strength
- Surface compaction hazard

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

88E—Whitecow gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bk1—4 to 34 inches; very gravelly loam
- Bk2—34 to 60 inches; extremely gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Trapps and similar soils: 5 percent

Management Considerations

Whitecow

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

88F—Whitecow gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bk1—4 to 34 inches; very gravelly loam
- Bk2—34 to 60 inches; extremely gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Trapps and similar soils: 5 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Lap
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material
- Trapps
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

91—Nuley-Rock outcrop complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,300 to 6,500

Mean annual precipitation: 10 to 14 inches

Frost-free period: 90 to 115 days

Component Description

Nuley and similar soils

Composition: 65 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Calcic Argiustolls

Landform:

- hills
- structural benches

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- A—0 to 4 inches; sandy loam
- Bt—4 to 11 inches; sandy clay loam
- Bk—11 to 24 inches; gravelly sandy loam
- 2C—24 to 42 inches; gravelly coarse sand
- R—42 to 60 inches; unweathered bedrock

Rock outcrop

Composition: 20 percent

Landform: None assigned

Additional Components

Rentsac and similar soils: 10 percent
Nuley, thick surface and similar soils: 5 percent

Management Considerations

Nuley

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rentsac

- Shallow soil
- Low bearing strength

Nuley, thick surface

- Low bearing strength
- Surface compaction hazard

91E—Mohaggin stony ashy very fine sandy loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,800 to 9,150

Mean annual precipitation: 22 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Mohaggin and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystricrypts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Stony ashy very fine sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Oe—2 to 5 inches; moderately decomposed plant material
- A—5 to 14 inches; stony ashy very fine sandy loam
- 2Bw—14 to 32 inches; very gravelly sandy loam
- 2C—32 to 60 inches; very cobbly loamy sand

Additional Components

Mohaggin, greater slopes and similar soils: 5 percent

Rubble land: 5 percent

Comad and similar soils: 3 percent

Mooseflat and similar soils: 2 percent

Management Considerations

Mohaggin

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Mohaggin, greater slopes

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land

- Nonsoil material

Comad

- Cutslope slumping
- Cutslope erosion

Mooseflat

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

92D—Clunton, Cometcrik, and Perma, stony, soils, 0 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,940 to 6,500

Mean annual precipitation: 12 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Clunton and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Fluvaquentic Endoaquolls

Landform:

- flood plains
- flood-plain steps

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Fine-loamy alluvium over sandy and gravelly alluvium

Flooding: Frequent

Water table: Present

Ponding duration: Brief

Available water capacity to 60-inch depth: Approximately 9.8 inches

Typical profile:

- Ag—0 to 14 inches; loam
- Cg1—14 to 38 inches; silty clay loam
- 2Cg2—38 to 60 inches; gravelly sandy loam

Cometcrik and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Landform:

- drainageways
- flood plains
- flood-plain steps

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Fine-loamy alluvium

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 9.5 inches

Typical profile:

A—0 to 12 inches; loam

Bw—12 to 42 inches; loam

2Cg1—42 to 58 inches; gravelly coarse sand

3Cg2—58 to 60 inches; stratified gravelly fine sandy loam to silty clay loam

Perma, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly slope alluvium and/or colluvium derived from basalt and/or metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 7 inches; cobbly loam

Bw—7 to 36 inches; very cobbly loam

BC—36 to 60 inches; extremely gravelly loam

Additional Components

Clunton, cool and similar soils: 5 percent

Meadowcreek and similar soils: 4 percent

Dougcliff and similar soils: 2 percent

Eagleton, stony and similar soils: 2 percent

Faith and similar soils: 2 percent

Management Considerations

Clunton

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Cometcrik

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Perma, stony

- Low bearing strength
- Surface compaction hazard

Clunton, cool

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Meadowcreek

- Flooding
- High water table
- Low bearing strength
- Surface compaction hazard

Dougcliff

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Eagleton, stony

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Faith

- Low bearing strength
- Surface compaction hazard

92E—Whitore gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 10 inches; gravelly loam
- Bw—10 to 16 inches; very gravelly clay loam
- Bk—16 to 60 inches; very gravelly loam

Additional Components

Helmville and similar soils: 5 percent

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Whitore

- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

92F—Whitore gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 10 inches; gravelly loam
- Bw—10 to 16 inches; very gravelly clay loam
- Bk—16 to 60 inches; very gravelly loam

Additional Components

Helmville and similar soils: 5 percent

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Lap

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

94—Oro Fino-Poin complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,760 to 8,500

Mean annual precipitation: 15 to 20 inches

Frost-free period: 50 to 70 days

Component Description

Oro Fino and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform:

- backslope on hills
- footslope on hills

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Loamy colluvium and/or residuum weathered from gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- A—0 to 10 inches; gravelly loam
- Bt—10 to 22 inches; gravelly sandy clay loam
- Bk1—22 to 42 inches; gravelly loam
- Bk2—42 to 60 inches; very gravelly loamy sand

Poin and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- shoulder on hills
- summit on hills

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very flaggy sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum and/or colluvium derived from gneiss

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.8 inches

Typical profile:

- A—0 to 7 inches; very flaggy sandy loam
- Bw—7 to 14 inches; extremely channery sandy loam
- R—14 to 60 inches; unweathered bedrock

Additional Components

Adel and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Oro Fino

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin

- Steep slopes
- Erodible surface
- Shallow soil

Adel

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

94E—Fessler gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Fessler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.5 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- A1—3 to 7 inches; gravelly loam
- A2—7 to 13 inches; very gravelly clay loam
- Bt1—13 to 32 inches; very cobbly clay loam
- Bt2—32 to 40 inches; very cobbly clay loam
- BC—40 to 60 inches; very cobbly sandy clay loam

Additional Components

Rock outcrop: 5 percent
Winkler and similar soils: 5 percent
Yreka and similar soils: 5 percent

Management Considerations

Fessler

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Winkler

- Low bearing strength

Yreka

- Low bearing strength
- Surface compaction hazard

95—Pensore-Crago, cool-Rock outcrop complex, 25 to 75 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,500 to 7,390
Mean annual precipitation: 10 to 23 inches
Frost-free period: 90 to 120 days

Component Description

Pensore and similar soils

Composition: 40 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calcustepts
Landform:

- hillsides
- ridges

Slope: 25 to 75 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Very channery loam
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.3 inches
Typical profile:

- A—0 to 4 inches; very channery loam
- Bk—4 to 16 inches; very channery loam
- R—16 to 60 inches; unweathered bedrock

Crago and similar soils

Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Aridic Calcustepts
Landform: Dissected terraces
Slope: 25 to 45 percent

Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Very stony loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium derived from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 4 inches; very stony loam
Bk1—4 to 15 inches; very stony loam
Bk2—15 to 60 inches; very cobbly loam

Rock outcrop

Composition: 25 percent
Landform: None assigned

Additional Components

Lithic Calciustepts and similar soils: 5 percent

Management Considerations

Pensore

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Crago

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lithic Calciustepts

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

95E—Yreka gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400
Mean annual precipitation: 20 to 25 inches
Frost-free period: 70 to 90 days

Component Description

Yreka and similar soils

Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/rough fescue

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Bignell and similar soils: 5 percent

Winkler and similar soils: 4 percent

Crow and similar soils: 3 percent

Whitlash and similar soils: 3 percent

Management Considerations

Yreka

- Low bearing strength
- Surface compaction hazard

Bignell

- Low bearing strength
- Surface compaction hazard

Winkler

- Low bearing strength

Crow

- Low bearing strength
- Surface compaction hazard

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

95F—Yreka gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 20 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Yreka and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/rough fescue

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Bignell and similar soils: 5 percent

Winkler and similar soils: 4 percent

Crow and similar soils: 3 percent

Whitlash and similar soils: 3 percent

Management Considerations

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Winkler

- Steep slopes
- Erodible surface
- Low bearing strength

Crow

- Low bearing strength
- Surface compaction hazard

Whitlash

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

96D—Worock gravelly loam, cool, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 24 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; gravelly loam
- E/B_t—6 to 17 inches; gravelly loam
- B_t—17 to 34 inches; very gravelly clay loam
- C—34 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent

Loberg and similar soils: 4 percent

Danaher and similar soils: 3 percent

Evoro and similar soils: 3 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Evoro

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

96E—Worock gravelly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 24 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 6 inches; gravelly loam

E/Bt—6 to 17 inches; gravelly loam

Bt—17 to 34 inches; very gravelly clay loam

C—34 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent

Loberg and similar soils: 4 percent

Danaher and similar soils: 3 percent

Evoro and similar soils: 3 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Evoro

- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

96F—Worock gravelly loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 24 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/beargrass
- subalpine fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; gravelly loam
- E/Bt—6 to 17 inches; gravelly loam
- Bt—17 to 34 inches; very gravelly clay loam
- C—34 to 60 inches; very gravelly sandy clay loam

Additional Components

Elve and similar soils: 5 percent

Evvaro and similar soils: 4 percent

Danaher and similar soils: 3 percent

Loberg and similar soils: 3 percent

Management Considerations

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface
- Low bearing strength

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Danaher

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Loberg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

97D—Evapo gravelly ashy loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Evapo and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/blue huckleberry
- subalpine fir/twinflower

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 8 inches; gravelly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E and Bt—25 to 60 inches; extremely gravelly sandy loam

Additional Components

Elve and similar soils: 5 percent

Holloway and similar soils: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Evavo

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

97E—Evavo gravelly ashy loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Evavo and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/blue huckleberry
- subalpine fir/twinflower

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- A—2 to 8 inches; gravelly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E and B_t—25 to 60 inches; extremely gravelly sandy loam

Additional Components

Holloway and similar soils: 4 percent

Rock outcrop: 4 percent

Worock and similar soils: 4 percent

Elve and similar soils: 3 percent

Management Considerations

Evavo

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Holloway

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

97F—Evavo gravelly ashy loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Evavo and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 8 inches; gravelly ashy loam
- 2E—8 to 25 inches; very gravelly sandy loam
- 2E and Bt—25 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent
Worock and similar soils: 4 percent
Elve and similar soils: 3 percent
Holloway and similar soils: 3 percent

Management Considerations

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface
- Low bearing strength

Holloway

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

98E—Trapps gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Trapps and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt—8 to 29 inches; very gravelly clay loam

Bk1—29 to 42 inches; very gravelly loam

Bk2—42 to 60 inches; extremely gravelly loam

Additional Components

Silverchief and similar soils: 5 percent

Whitecow and similar soils: 4 percent

Lap and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Trapps

- Low bearing strength
- Surface compaction hazard

Silverchief

- Low bearing strength
- Surface compaction hazard

Whitecow

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

98F—Trapps gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Trapps and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt—8 to 29 inches; very gravelly clay loam
- Bk1—29 to 42 inches; very gravelly loam
- Bk2—42 to 60 inches; extremely gravelly loam

Additional Components

Silverchief and similar soils: 5 percent

Whitecow and similar soils: 4 percent

Lap and similar soils: 3 percent

Rock outcrop: 3 percent

Management Considerations

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Silverchief

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Lap

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

99E—Bignell gravelly clay loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 15 inches; gravelly clay loam

Bt—15 to 60 inches; very gravelly clay

Additional Components

Crow and similar soils: 5 percent

Yreka and similar soils: 4 percent

Rock outcrop: 3 percent

Sharrott and similar soils: 3 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Sharrott

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

111A—Canarway-McCabe complex, 0 to 2 percent slopes, occasionally flooded

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,800

Mean annual precipitation: 10 to 19 inches

Frost-free period: 70 to 105 days

Component Description

Canarway and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Aeric Fluvaquents

Landform: Flood plains

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Sandy and gravelly alluvium

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 4 inches; gravelly sandy loam

C—4 to 10 inches; gravelly sandy loam

2C—10 to 60 inches; very gravelly sand

Mccabe and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Aeric Fluvaquents

Landform: Tread on flood plains

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Coarse-loamy alluvium over sandy and gravelly alluvium

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

A—0 to 2 inches; sandy loam

C1—2 to 9 inches; sandy loam

C2—9 to 36 inches; fine sandy loam

2C—36 to 60 inches; very gravelly loamy sand

Additional Components

Flintcreek and similar soils: 5 percent

Riverwash: 5 percent

Water: 3 percent

Nythar and similar soils: 2 percent

Management Considerations

Canarway

- Flooding
- High water table
- High windthrow hazard

Mccabe

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength

Flintcreek

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Riverwash

- Nonsoil material

Water

- Nonsoil material

Nythar

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

112E—Monaberg-Bridger-Libeg, stony, complex, 8 to 25 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,460 to 6,090

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Monaberg and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Backslope on hills

Slope: 15 to 25 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.4 inches

Typical profile:

A—0 to 10 inches; loam

Bt—10 to 28 inches; gravelly sandy clay loam

C—28 to 60 inches; gravelly sandy clay loam

Bridger and similar soils

Composition: 25 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform: Foothills on hills
Slope: 8 to 15 percent, west to southeast aspects
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Tertiary volcanic alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 8.0 inches
Typical profile:
A1—0 to 3 inches; loam
A2—3 to 9 inches; loam
Bt—9 to 17 inches; clay
Bk—17 to 34 inches; loam
C—34 to 60 inches; sandy loam

Libeg, stony and similar soils

Composition: 20 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform: Shoulder on hills
Slope: 8 to 25 percent, west to southeast aspects
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.0 inches
Typical profile:
A1—0 to 5 inches; gravelly loam
A2—5 to 11 inches; very cobbly loam
Bt—11 to 23 inches; very gravelly sandy clay loam
C—23 to 60 inches; very gravelly sandy loam

Additional Components

Philipsburg, stony and similar soils: 15 percent
Adel and similar soils: 10 percent

Management Considerations

Monaberg

- Low bearing strength
- Surface compaction hazard

Bridger

- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Philipsburg, stony

- Low bearing strength
- Surface compaction hazard

Adel

- Low bearing strength
- Surface compaction hazard

115D—Philipsburg-Ratiopeak complex, 8 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,490 to 6,250

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Philipsburg and similar soils

Composition: 55 percent

Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform: Backslope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Loamy alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.3 inches

Typical profile:

A—0 to 9 inches; sandy loam

Bt—9 to 22 inches; clay loam

Bk1—22 to 40 inches; gravelly loam

Bk2—40 to 60 inches; gravelly loam

Ratiopeak and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- shoulder on hills

- backslope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt—8 to 15 inches; very gravelly sandy clay loam

- Bk1—15 to 24 inches; very gravelly loam
- Bk2—24 to 45 inches; very cobbly loam
- BC—45 to 60 inches; very gravelly coarse sandy loam

Additional Components

- Bearmouth and similar soils: 5 percent
- Bridger and similar soils: 5 percent
- Danielvil and similar soils: 4 percent
- Rock outcrop, granite: 1 percent

Management Considerations

Philipsburg

- Low bearing strength
- Surface compaction hazard

Ratiopeak

- Low bearing strength
- Surface compaction hazard

Bearmouth

- None

Bridger

- Low bearing strength
- Surface compaction hazard

Danielvil

- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

118—Sebud-Hapgood family, complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,500 to 8,000

Mean annual precipitation: 15 to 35 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- moraines
- mountainsides

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or till derived from igneous and metamorphic rock

Flooding: None

Soil Survey of Deerlodge National Forest Area, Montana

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- A—0 to 14 inches; very stony loam
- Bw1—14 to 30 inches; very stony sandy clay loam
- Bw2—30 to 46 inches; very stony sandy clay loam
- C—46 to 60 inches; very stony sandy loam

Hapgood and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- depressions
- moraines

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Bouldery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from argillite and/or metaquartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- A—0 to 18 inches; bouldery loam
- C—18 to 60 inches; very cobbly loam

Additional Components

Oro Fino and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hapgood

- Steep slopes
- Erodible surface
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Oro Fino

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

119—Sebud-Hapgood family-Rock outcrop complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,500 to 10,000

Mean annual precipitation: 15 to 35 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- moraines
- mountainsides

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very flaggy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or till derived from igneous and metamorphic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

- A—0 to 14 inches; very flaggy loam
- Bw1—14 to 30 inches; very stony sandy clay loam
- Bw2—30 to 46 inches; very stony sandy loam
- C—46 to 60 inches; very stony sandy loam

Hapgood and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- mountainsides
- swales

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Bouldery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from argillite and/or metaquartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- A—0 to 18 inches; bouldery loam
- C—18 to 60 inches; very cobbly loam

Rock outcrop

Composition: 15 percent

Landform: None assigned

Additional Components

Adel and similar soils: 2 percent
Poin and similar soils: 2 percent
Tiban and similar soils: 1 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hapgood

- Steep slopes
- Erodible surface
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Adel

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin

- Steep slopes
- Erodible surface
- Shallow soil

Tiban

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

121E—Maiden-Lap-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Maiden and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- divides
- escarpments
- hillsides
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: Lithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Gravelly slope alluvium and/or colluvium over residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 2.3 inches
Typical profile:
A—0 to 7 inches; gravelly loam
Bk—7 to 26 inches; very cobbly loam
R—26 to 60 inches; unweathered bedrock

Lap and similar soils

Composition: 30 percent
Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calciustolls
Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Very gravelly loam
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Gravelly colluvium over residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 4 inches; very gravelly loam
Bk—4 to 18 inches; extremely gravelly loam
R—18 to 60 inches; unweathered bedrock

Rock outcrop, limestone

Composition: 20 percent
Definition: Rock outcrop consists mainly of areas of exposed hard limestone bedrock. Limestone cobbles and stones litter the area and accumulate at the base of hills and escarpments.
Landform: None assigned

Additional Components

Judell and similar soils: 2 percent
Windham and similar soils: 2 percent
Windham, very cobbly loam, very stony and similar soils: 1 percent

Management Considerations

Maiden

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, limestone

- Nonsoil material

Judell

- Low bearing strength
- Surface compaction hazard

Windham

- Low bearing strength
- Surface compaction hazard

Windham, very cobbly loam, very stony

- Low bearing strength
- Surface compaction hazard

122E—Maiden-Lap-Windham complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Maiden and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium and/or colluvium over residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 7 inches; very gravelly loam
- Bk—7 to 26 inches; very cobbly loam
- R—26 to 60 inches; unweathered bedrock

Lap and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calciustolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly colluvium over residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 4 inches; very gravelly loam
- Bk—4 to 18 inches; extremely gravelly loam
- R—18 to 60 inches; unweathered bedrock

Windham and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

- A—0 to 7 inches; gravelly loam
- Bk1—7 to 25 inches; very gravelly loam
- Bk2—25 to 60 inches; extremely gravelly loam

Additional Components

Judell and similar soils: 5 percent

Rock outcrop, limestone: 4 percent

Wimper and similar soils: 4 percent

Windham, very stony and similar soils: 2 percent

Management Considerations

Maiden

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Windham

- Low bearing strength
- Surface compaction hazard

Judell

- Low bearing strength
- Surface compaction hazard

Rock outcrop, limestone

- Nonsoil material

Wimper

- Low bearing strength
- Surface compaction hazard

Windham, very stony

- Low bearing strength
- Surface compaction hazard

124E—Monaberg-Bridger complex, 8 to 30 percent slopes, very stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 6,580

Mean annual precipitation: 14 to 19 inches

Frost-free period: 30 to 70 days

Component Description

Monaberg, very stony and similar soils

Composition: 55 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:

- shoulder on hills
- backslope on hills

Slope: 8 to 30 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.20 to 3.00 percent stones, 10 to 40 feet apart, mixed

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Mixed volcanic or granite alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.4 inches

Typical profile:

A—0 to 10 inches; loam

Bt—10 to 28 inches; gravelly sandy clay loam

C—28 to 60 inches; gravelly sandy clay loam

Bridger, very stony and similar soils

Composition: 20 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform:

- footslope on hills
- swales

Slope: 8 to 15 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.20 to 3.00 percent stones, 10 to 40 feet apart, mixed

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tertiary volcanic alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.0 inches

Typical profile:

A1—0 to 3 inches; loam

A2—3 to 9 inches; loam

Bt—9 to 17 inches; clay

Bk—17 to 34 inches; loam

C—34 to 60 inches; sandy loam

Additional Components

Monaberg, very stony, greater slopes and similar soils: 10 percent

Sebud, stony and similar soils: 10 percent

Gnojek, stony and similar soils: 5 percent

Management Considerations

Monaberg, very stony

- Low bearing strength
- Surface compaction hazard

Bridger, very stony

- Low bearing strength
- Surface compaction hazard

Monaberg, very stony, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sebud, stony

- Low bearing strength
- Surface compaction hazard

Gnojek, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

135—Tiban very stony loam, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,500 to 8,000

Mean annual precipitation: 15 to 35 inches

Frost-free period: 30 to 70 days

Component Description

Tiban and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- backslope on hills
- footslope on hills
- moraines

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till and/or alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

- A—0 to 7 inches; very stony loam
- Bw—7 to 22 inches; very cobbly loam
- Bk—22 to 60 inches; very cobbly loam

Additional Components

Hapgood and similar soils: 5 percent

Rock outcrop: 5 percent

Sebud and similar soils: 5 percent

Management Considerations

Tiban

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hapgood

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

142E—Ratiopeak-Philipsburg complex, 15 to 35 percent slopes, very stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,360 to 6,870

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Ratiopeak, very stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on escarpments

Slope: 20 to 35 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 2.00 percent stones, 7 to 30 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

A—0 to 8 inches; very cobbly loam

Bt—8 to 15 inches; very gravelly sandy clay loam

Bk1—15 to 24 inches; very gravelly loam

Bk2—24 to 45 inches; very cobbly loam

BC—45 to 60 inches; very gravelly coarse sandy loam

Philipsburg, very stony and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform: Tread footslope on escarpments

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.10 to 2.00 percent stones, 7 to 30 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Loamy alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.3 inches

Typical profile:

A—0 to 9 inches; cobbly loam

Bt—9 to 22 inches; clay loam

Bk1—22 to 40 inches; gravelly loam

Bk2—40 to 60 inches; gravelly loam

Additional Components

Bridger and similar soils: 10 percent

Ratiopeak, very stony, greater slopes and similar soils: 5 percent

Management Considerations

Ratiopeak, very stony

- Low bearing strength
- Surface compaction hazard

Philipsburg, very stony

- Low bearing strength
- Surface compaction hazard

Bridger

- Low bearing strength
- Surface compaction hazard

Ratiopeak, very stony, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

145C—Redchief-Mollet complex, 4 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform: Toeslope on mountains

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

A—0 to 6 inches; cobbly loam

Bt1—6 to 10 inches; very gravelly clay loam

Bt2—10 to 60 inches; very gravelly clay loam

Mollet and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform: Toeslope on mountains

Slope: 4 to 8 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium and/or colluvium derived from igneous rock
Flooding: None
Available water capacity to 60-inch depth: Approximately 9.1 inches
Typical profile:
A—0 to 10 inches; loam
Bt1—10 to 28 inches; clay loam
Bt2—28 to 60 inches; gravelly clay loam

Additional Components

Libeg and similar soils: 8 percent
Maciver and similar soils: 7 percent

Management Considerations

Redchief

- Low bearing strength
- Surface compaction hazard

Mollet

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Maciver

- Low bearing strength
- Surface compaction hazard

145D—Redchief-Mollet complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000
Mean annual precipitation: 15 to 22 inches
Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils

Composition: 50 percent
Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls
Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from igneous rock

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Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

A—0 to 6 inches; cobbly loam

Bt1—6 to 10 inches; very gravelly clay loam

Bt2—10 to 60 inches; very gravelly clay loam

Mollet and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

A—0 to 10 inches; loam

Bt1—10 to 28 inches; clay loam

Bt2—28 to 60 inches; gravelly clay loam

Additional Components

Libeg and similar soils: 8 percent

Maciver and similar soils: 7 percent

Management Considerations

Redchief

- Low bearing strength
- Surface compaction hazard

Mollet

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Maciver

- Low bearing strength
- Surface compaction hazard

145E—Redchief-Mollet complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Redchief and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- A—0 to 6 inches; cobbly loam
- Bt1—6 to 10 inches; very gravelly clay loam
- Bt2—10 to 60 inches; very gravelly clay loam

Mollet and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

- A—0 to 10 inches; loam
- Bt1—10 to 28 inches; clay loam
- Bt2—28 to 60 inches; gravelly clay loam

Additional Components

Libeg and similar soils: 8 percent

Maciver and similar soils: 7 percent

Management Considerations

Redchief

- Low bearing strength
- Surface compaction hazard

Mollet

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Maciver

- Low bearing strength
- Surface compaction hazard

**149D—Bridger-Libeg complex, 8 to 25 percent slopes,
very stony**

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,480 to 6,660

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Bridger, very stony and similar soils

Composition: 65 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform:

- fan remnants
- swales

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.20 to 3.00 percent stones, 10 to 40 feet apart, mixed

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tertiary volcanic alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.0 inches

Typical profile:

- A1—0 to 3 inches; very cobbly loam
- A2—3 to 9 inches; loam
- Bt—9 to 17 inches; clay
- Bk—17 to 34 inches; loam
- C—34 to 60 inches; sandy loam

Libeg, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Fan remnants

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely cobbly loam

Rock fragments on the soil surface: 0.20 to 3.00 percent stones, 10 to 40 feet apart, mixed

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

A1—0 to 5 inches; extremely cobbly loam

A2—5 to 11 inches; very cobbly loam

Bt—11 to 23 inches; very gravelly sandy clay loam

C—23 to 60 inches; very gravelly sandy loam

Additional Components

Mawspring, very stony and similar soils: 10 percent

Adel and similar soils: 5 percent

Management Considerations

Bridger, very stony

- Low bearing strength
- Surface compaction hazard

Libeg, very stony

- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Mawspring, very stony

- Low bearing strength
- Surface compaction hazard

Adel

- Low bearing strength
- Surface compaction hazard

150D—Sebud, very stony-Ratiopeak, stony-Bridger, stony, complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,450 to 6,270

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Fan remnants

Slope: 4 to 15 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 2.00 percent stones, 13 to 30 feet apart, quartzite

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Sandy and gravelly alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

A1—0 to 6 inches; very cobbly loam

A2—6 to 12 inches; very cobbly loam

Bw—12 to 20 inches; very cobbly sandy loam

BC—20 to 30 inches; very cobbly sandy loam

C—30 to 60 inches; very gravelly sandy loam

Ratiopeak, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- backslope on escarpments
- shoulder on escarpments

Slope: 4 to 15 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 30 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

A—0 to 8 inches; very cobbly loam

Bt—8 to 15 inches; very gravelly sandy clay loam

Bk1—15 to 24 inches; very gravelly loam

Bk2—24 to 45 inches; very cobbly loam

BC—45 to 60 inches; very gravelly coarse sandy loam

Bridger, stony and similar soils

Composition: 15 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform: Fan remnants

Slope: 4 to 15 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 150 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tertiary volcanic alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.0 inches

Typical profile:

A1—0 to 3 inches; cobbly loam

A2—3 to 9 inches; loam

Bt—9 to 17 inches; clay

Bk—17 to 34 inches; loam
C—34 to 60 inches; sandy loam

Additional Components

Adel and similar soils: 9 percent
Ratiopeak, very stony and similar soils: 6 percent

Management Considerations

Sebud, very stony

- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

Bridger, stony

- Low bearing strength
- Surface compaction hazard

Adel

- Low bearing strength
- Surface compaction hazard

Ratiopeak, very stony

- Low bearing strength
- Surface compaction hazard

151E—Shawmut cobbly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,800
Mean annual precipitation: 15 to 19 inches
Frost-free period: 70 to 90 days

Component Description

Shawmut and similar soils

Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls
Landform: Alluvial fans
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.5 inches
Typical profile:

- A—0 to 6 inches; cobbly loam
- Bt—6 to 12 inches; gravelly clay loam
- Btk—12 to 18 inches; very gravelly clay loam
- Bk—18 to 60 inches; very gravelly loam

Additional Components

Roy and similar soils: 8 percent
Danvers and similar soils: 7 percent

Management Considerations

Shawmut

- Low bearing strength
- Surface compaction hazard

Roy

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

152—Whitecow-Rock outcrop complex, 25 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,500 to 8,000

Mean annual precipitation: 17 to 30 inches

Frost-free period: 50 to 110 days

Component Description

Whitecow and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform: Mountainsides

Slope: 25 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Extremely channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 9 inches; extremely channery loam

Bk1—9 to 20 inches; very channery loam

Bk2—20 to 60 inches; extremely channery loam

Rock outcrop

Composition: 25 percent

Landform: None assigned

Additional Components

Ustic Calcicryolls and similar soils: 13 percent

Clayey soils and similar soils: 12 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Ustic Calcicryolls

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Clayey soils

- Onsite required

155—Whitore-Rock outcrop complex, 25 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,500 to 8,500

Mean annual precipitation: 16 to 35 inches

Frost-free period: 30 to 90 days

Component Description

Whitore and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountainsides

Slope: 25 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/ninebark

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 12 inches; channery loam

Bk—12 to 60 inches; very channery loam

Whitore, stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountainsides

Slope: 25 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/ninebark

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 12 inches; stony loam

Bk—12 to 60 inches; extremely channery loam

Rock outcrop

Composition: 15 percent

Landform: None assigned

Additional Components

Hanson and similar soils: 3 percent

Mikesell and similar soils: 2 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitore, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Hanson

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Mikesell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

165A—Mooseflat-Foxgulch complex, 0 to 4 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,580 to 6,920

Mean annual precipitation: 14 to 19 inches

Frost-free period: 30 to 70 days

Component Description

Mooseflat and similar soils

Composition: 60 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Landform: Flood plains

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 12 inches; loam

Bg—12 to 18 inches; sandy loam

BCg—18 to 26 inches; very gravelly loamy sand

2Cg—26 to 60 inches; very cobbly loamy coarse sand

Foxgulch and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls

Landform: Flood-plain steps

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium

Flooding: Very rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 12 inches; loam

Bw—12 to 30 inches; loam

BC—30 to 46 inches; sandy clay loam

2C—46 to 60 inches; very gravelly coarse sand

Additional Components

Kilgore and similar soils: 10 percent

Water: 5 percent

Management Considerations

Mooseflat

- High water table
- High windthrow hazard
- Hydrophobic surface layer

- Low bearing strength
 - Surface compaction hazard
- Foxgulch
- High water table
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Kilgore
- High water table
 - High windthrow hazard
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Water
- Nonsoil material

171D—Branham-Opitz-Tuggle complex, 2 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Branham, warm and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 36 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; sandy loam
- Bw—8 to 16 inches; gravelly coarse sandy loam
- BC—16 to 30 inches; gravelly loamy coarse sand
- Cr—30 to 36 inches; weathered bedrock
- R—36 to 60 inches; unweathered bedrock

Opitz and similar soils

Composition: 30 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountain slopes
- plateaus
- ridges

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Coarse-loamy colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

A—0 to 10 inches; sandy loam

Bt1—10 to 15 inches; gravelly coarse sandy loam

Bt2—15 to 22 inches; gravelly coarse sandy loam

BC—22 to 36 inches; very gravelly coarse sandy loam

Cr—36 to 57 inches; weathered bedrock

R—57 to 60 inches; unweathered bedrock

Tuggle and similar soils

Composition: 15 percent

Taxonomic class: Loamy, mixed, superactive Lithic Haplocryolls

Landform:

- escarpments
- mountainflank on mountain slopes
- mountaintop on mountain slopes
- ridges

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

A—0 to 7 inches; coarse sandy loam

Bw—7 to 15 inches; gravelly coarse sandy loam

Cr—15 to 18 inches; weathered bedrock

R—18 to 60 inches; unweathered bedrock

Additional Components

Branham, moist and similar soils: 6 percent

Caseypeak and similar soils: 5 percent

Branham, loam and similar soils: 4 percent

Management Considerations

Branham, warm

- None

Opitz

- Low bearing strength

Tuggle

- Shallow soil

Branham, moist

- None

Caseypeak

- Shallow soil
- Low bearing strength

Branham, loam

- Low bearing strength
- Surface compaction hazard

172E—Branham-Clugulch-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Branham and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 36 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; sandy loam
- Bw—8 to 16 inches; gravelly coarse sandy loam
- BC—16 to 30 inches; gravelly loamy coarse sand
- Cr—30 to 36 inches; weathered bedrock
- R—36 to 60 inches; unweathered bedrock

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; sandy loam
- Bw—5 to 9 inches; gravelly sandy loam
- R—9 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Tuggle and similar soils: 5 percent

Opitz and similar soils: 4 percent

Branham, moist and similar soils: 3 percent

Caseypeak and similar soils: 3 percent

Management Considerations

Branham

- None

Clugulch

- Shallow soil

Rock outcrop, granite

- Nonsoil material

Tuggle

- Shallow soil

Opitz

- Low bearing strength

Branham, moist

- Low bearing strength
- Surface compaction hazard

Caseypeak

- Shallow soil
- Low bearing strength

179E—Ambrant-Rochester complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 6,800

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Ambrant and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 20 inches; stony sandy loam

E and Bt—20 to 30 inches; stony coarse sandy loam

2C—30 to 60 inches; very gravelly coarse sand

Rochester and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A—2 to 5 inches; very stony sandy loam

C1—5 to 18 inches; very stony loamy sand

C2—18 to 60 inches; very stony loamy sand

Additional Components

Bignell and similar soils: 8 percent

Rock outcrop: 7 percent

Management Considerations

Ambrant

- None

Rochester

- Cutslope slumping
- Cutslope erosion

Bignell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

179F—Ambrant-Rochester complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 6,800

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Ambrant and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 20 inches; stony sandy loam

E and Bt—20 to 30 inches; stony coarse sandy loam

2C—30 to 60 inches; very gravelly coarse sand

Rochester and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A—2 to 5 inches; very stony sandy loam

C1—5 to 18 inches; very stony loamy sand

C2—18 to 60 inches; very stony loamy sand

Additional Components

Bignell and similar soils: 8 percent

Rock outcrop: 7 percent

Management Considerations

Ambrant

- Steep slopes
- Erodible surface

Rochester

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

185E—Relyea-Helmville complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,600 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Relyea and similar soils

Composition: 55 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 6 inches; gravelly loam

Bt/E—6 to 16 inches; gravelly clay loam

Bt—16 to 27 inches; very gravelly clay loam

Bk—27 to 60 inches; very cobbly loam

Helmville and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; cobbly loam

Bt1—10 to 14 inches; very cobbly clay loam

Bt2—14 to 25 inches; very cobbly clay loam

Bk—25 to 60 inches; very cobbly clay loam

Additional Components

Danaher and similar soils: 5 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Relyea

- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

190E—Mocmont gravelly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Mocmont and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 10 inches; gravelly loam
- Bt—10 to 41 inches; very cobbly clay loam
- BC—41 to 60 inches; extremely cobbly loam

Additional Components

Yreka and similar soils: 8 percent

Rock outcrop: 7 percent

Management Considerations

Mocmont

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

195E—Yreka gravelly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Yreka and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 14 inches; gravelly loam
- E/Bt—14 to 20 inches; gravelly loam
- Bt—20 to 60 inches; very gravelly clay loam

Additional Components

Bignell and similar soils: 5 percent

Crow and similar soils: 5 percent

Winkler and similar soils: 5 percent

Management Considerations

Yreka

- Low bearing strength
- Surface compaction hazard

Bignell

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Winkler

- Low bearing strength

195F—Yreka gravelly loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 20 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Yreka and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Bignell and similar soils: 5 percent

Crow and similar soils: 5 percent

Winkler and similar soils: 5 percent

Management Considerations

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Winkler

- Steep slopes
- Erodible surface
- Low bearing strength

198E—Trapps-Yreka complex, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 24 inches

Frost-free period: 70 to 90 days

Component Description

Trapps and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; stony loam

Bt—7 to 23 inches; very gravelly clay loam

Bk1—23 to 32 inches; very gravelly loam

Bk2—32 to 60 inches; extremely gravelly loam

Yreka and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 14 inches; stony loam

E/Bt—14 to 20 inches; gravelly loam

Bt—20 to 60 inches; very gravelly clay loam

Additional Components

Bignell and similar soils: 4 percent

Trapps, bouldery and similar soils: 4 percent

Whitecow and similar soils: 4 percent

Trapps, greater slopes and similar soils: 3 percent

Management Considerations

Trapps

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Bignell

- Low bearing strength
- Surface compaction hazard

Trapps, bouldery

- Low bearing strength
- Surface compaction hazard

Whitecow

- Low bearing strength
- Surface compaction hazard

Trapps, greater slopes

- Low bearing strength
- Surface compaction hazard

199E—Bignell gravelly clay loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 15 inches; gravelly clay loam

Bt—15 to 60 inches; very gravelly clay

Additional Components

Hoyt and similar soils: 5 percent
Rock outcrop: 5 percent
Yreka and similar soils: 5 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Hoyt

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Yreka

- Low bearing strength
- Surface compaction hazard

199Eg—Bignell gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- O_i—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly loam
- E/B_t—9 to 15 inches; very gravelly loam
- B_t—15 to 60 inches; very gravelly clay

Additional Components

Crow and similar soils: 5 percent
Rock outcrop: 5 percent
Yreka and similar soils: 5 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Yreka

- Low bearing strength
- Surface compaction hazard

199F—Bignell gravelly clay loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 85 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 15 inches; gravelly clay loam
- Bt—15 to 60 inches; very gravelly clay

Additional Components

Yreka and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

204F—Windham, very stony-Maiden, very stony-Rock outcrop complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Windham, very stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- A—0 to 7 inches; very gravelly loam
- Bk1—7 to 25 inches; very gravelly loam
- Bk2—25 to 60 inches; extremely gravelly loam

Maiden, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

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Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/bluebunch wheatgrass
- Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 6 inches; very gravelly loam
- Bk—6 to 24 inches; very gravelly loam
- R—24 to 60 inches; unweathered bedrock

Rock outcrop, limestone

Composition: 20 percent

Definition: Rock outcrop consists mainly of areas of exposed hard limestone bedrock.

Limestone cobbles and stones litter the area and accumulate at the base of hills and escarpments.

Landform: None assigned

Additional Components

Lap, very stony and similar soils: 4 percent

Warneke and similar soils: 3 percent

Whitecow, stony and similar soils: 3 percent

Management Considerations

Windham, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Maiden, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, limestone

- Nonsoil material

Lap, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Warneke

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitecow, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

241F—Whitlash, very stony-Rock outcrop-Perma, very stony, complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Whitlash, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- A—0 to 3 inches; very cobbly loam
- Bw—3 to 11 inches; extremely gravelly loam
- R—11 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Perma, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

A—0 to 7 inches; cobbly loam

Bw—7 to 36 inches; very cobbly loam

BC—36 to 60 inches; extremely gravelly loam

Additional Components

Sawicki, very stony and similar soils: 4 percent

Brickner, stony and similar soils: 3 percent

Kadygulch, very stony and similar soils: 3 percent

Management Considerations

Whitlash, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Perma, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sawicki, very stony

- Low bearing strength
- Surface compaction hazard

Brickner, stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Kadygulch, very stony

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

242D—Braziel gravelly loam, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Additional Components

Perma and similar soils: 5 percent

Shanley and similar soils: 5 percent

Straw and similar soils: 5 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Shanley

- Low bearing strength
- Surface compaction hazard

Straw

- Low bearing strength
- Surface compaction hazard

242E—Braziel gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt1—8 to 17 inches; very gravelly loam

Bt2—17 to 43 inches; very gravelly clay loam

BC—43 to 60 inches; extremely gravelly loam

Additional Components

Perma and similar soils: 5 percent

Shanley and similar soils: 5 percent

Straw and similar soils: 5 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Shanley

- Low bearing strength
- Surface compaction hazard

Straw

- Low bearing strength
- Surface compaction hazard

296E—Worock-Elve-Whitore complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 7,500

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Mountain slopes

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oe—0 to 1 inches; moderately decomposed plant material

E—1 to 7 inches; gravelly loam

E/Bt—7 to 19 inches; gravelly clay loam

Bt—19 to 29 inches; very gravelly clay loam

BC—29 to 60 inches; very gravelly sandy clay loam

Elve and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/pinegrass

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A—2 to 7 inches; stony loam

E—7 to 14 inches; very gravelly loam

Bw—14 to 34 inches; extremely cobbly sandy loam

BC—34 to 60 inches; extremely cobbly loam

Whitore and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform: Mountain slopes

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry

Surface layer texture: Stony loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Very calcareous gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

AB—1 to 8 inches; stony loam

Bk—8 to 60 inches; very cobbly clay loam

Additional Components

Evoro and similar soils: 5 percent

Loberg and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Whitore

- Low bearing strength
- Surface compaction hazard

Evoro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

299E—Bignell, dry-Yreka, cool, complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Forestland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 15 inches; gravelly clay loam
- Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 14 inches; gravelly loam
- E/Bt—14 to 20 inches; gravelly loam
- Bt—20 to 60 inches; very gravelly clay loam

Additional Components

Bignell, greater slopes and similar soils: 4 percent

Rock outcrop: 4 percent

Trapps and similar soils: 4 percent

Bushong and similar soils: 3 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Bignell, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

Bushong

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

299F—Bignell-Yreka complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,000 to 6,500

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 15 inches; gravelly clay loam
- Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Hills

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 14 inches; gravelly loam

E/Bt—14 to 20 inches; gravelly loam

Bt—20 to 60 inches; very gravelly clay loam

Additional Components

Rock outcrop: 4 percent

Trapps and similar soils: 4 percent

Yreka, greater slopes and similar soils: 4 percent

Bushong and similar soils: 3 percent

Management Considerations

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

Yreka, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bushong

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

303D—Moosejaw-Highrye-Silas complex, 2 to 15 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,360 to 6,770

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Moosejaw and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Cumulic Cryaquolls

Landform: Flood plains

Slope: 2 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Mixed alluvium over alluvium derived from granite

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

Oe—0 to 4 inches; mucky peat

A—4 to 22 inches; loam

Cg—22 to 48 inches; sandy loam

2Cg—48 to 72 inches; very gravelly coarse sand

Highrye and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on swales and depositional areas hills

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; gravelly sandy clay loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Silas and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Landform:

- toeslope on hills
- stream terraces

Slope: 2 to 8 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir series

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Mixed alluvium

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 11.9 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A1—1 to 18 inches; loam

A2—18 to 38 inches; loam

C—38 to 72 inches; loam

Additional Components

Branham, bouldery and similar soils: 10 percent

Zonite and similar soils: 9 percent

Rock outcrop: 1 percent

Management Considerations

Moosejaw

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Highrye

- Surface compaction hazard

Silas

- Flooding
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Branham, bouldery

- None

Zonite

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

305D—Beeftrail-Branham-Minestope complex, 2 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,230 to 7,570

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Beeftail and similar soils

Composition: 30 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

A—0 to 7 inches; coarse sandy loam

Bw—7 to 14 inches; gravelly coarse sandy loam

BC—14 to 26 inches; gravelly loamy coarse sand

Cr—26 to 35 inches; bedrock

R—35 to 60 inches; bedrock

Branham and similar soils

Composition: 25 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Interfluvium on hills

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 56 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; sandy loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Minestope and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Ustic Haplocryolls

Landform: Interfluvium on hills

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 20 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.3 inches

Typical profile:

- A—0 to 6 inches; coarse sandy loam
- Bw—6 to 11 inches; gravelly coarse sandy loam
- BC—11 to 17 inches; very gravelly loamy coarse sand
- Cr—17 to 26 inches; bedrock
- R—26 to 60 inches; bedrock

Additional Components

Minestope, gravelly coarse sandy loam and similar soils: 10 percent

Highrye and similar soils: 8 percent

Rock outcrop: 2 percent

Management Considerations

Beeftrail

- None

Branham

- None

Minestope

- Shallow soil

Minestope, gravelly coarse sandy loam

- Shallow soil

Highrye

- Surface compaction hazard

Rock outcrop

- Nonsoil material

306E—Wissikihon-Branham-Highrye complex, 8 to 30 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,150 to 6,690

Mean annual precipitation: 13 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Wissikihon and similar soils

Composition: 45 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on hills

Slope: 8 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

A—0 to 8 inches; coarse sandy loam

Bw—8 to 16 inches; gravelly coarse sandy loam

BC—16 to 48 inches; gravelly loamy coarse sand

Cr—48 to 60 inches; bedrock

Branham and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Side slope on hills

Slope: 15 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches

- lithic bedrock: 24 to 56 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; coarse sandy loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Highrye and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Base slope on hills

Slope: 8 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; sandy loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Additional Components

Oro Fino and similar soils: 11 percent
Zonite and similar soils: 3 percent
Rock outcrop: 1 percent

Management Considerations

Wissikihon

- Cutslope slumping
- Cutslope erosion

Branham

- None

Highrye

- Surface compaction hazard

Oro Fino

- Low bearing strength
- Surface compaction hazard

Zonite

- Shallow soil

Rock outcrop

- Nonsoil material

312D—Oro Fino-Highrye-Branham complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,410 to 6,580

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Oro Fino and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform: Base slope on hills

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Local alluvium derived from granite and/or colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.5 inches

Typical profile:

A—0 to 6 inches; coarse sandy loam

Bt—6 to 20 inches; gravelly sandy clay loam

Bk—20 to 38 inches; loam

C—38 to 60 inches; sandy loam

Highrye and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on hills

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; coarse sandy loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Branham and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Nose slope on hills

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches

- lithic bedrock: 24 to 56 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; coarse sandy loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Additional Components

Oro Fino, greater slopes and similar soils: 10 percent

Minestope and similar soils: 4 percent

Rock outcrop: 1 percent

Management Considerations

Oro Fino

- Low bearing strength
- Surface compaction hazard

Highrye

- Surface compaction hazard

Branham

- None

Oro Fino, greater slopes

- Low bearing strength
- Surface compaction hazard

Minestope

- Shallow soil

Rock outcrop

- Nonsoil material

313E—Beeftrail-Dinnen-Highrye complex, 15 to 45 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,430 to 7,530

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Beeftrail and similar soils

Composition: 30 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on south-tending hills

Slope: 15 to 45 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

- A—0 to 7 inches; gravelly coarse sandy loam
- Bw—7 to 14 inches; gravelly coarse sandy loam
- BC—14 to 26 inches; gravelly loamy coarse sand
- Cr—26 to 35 inches; bedrock
- R—35 to 60 inches; bedrock

Dinnen and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Side slope on south-tending hills

Slope: 15 to 35 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

A—0 to 9 inches; coarse sandy loam

Bw—9 to 21 inches; gravelly coarse sandy loam

BC—21 to 41 inches; gravelly coarse sandy loam

C—41 to 53 inches; gravelly loamy coarse sand

Cr—53 to 60 inches; bedrock

Highrye and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on north-tending hills

Slope: 15 to 45 percent, northwest to east aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; coarse sandy loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Dinnen, loam and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Base slope on hills

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.6 inches

Typical profile:

A—0 to 9 inches; loam

Bw—9 to 21 inches; gravelly coarse sandy loam

BC—21 to 41 inches; gravelly coarse sandy loam

C—41 to 53 inches; gravelly loamy coarse sand

Cr—53 to 60 inches; bedrock

Additional Components

Fleecer and similar soils: 5 percent

Zonite and similar soils: 5 percent

Rock outcrop: 3 percent
Bavdark and similar soils: 2 percent

Management Considerations

Beeftrail

- Steep slopes
- Erodible surface
- Cutslope erosion

Dinnen

- None

Highrye

- Steep slopes
- Erodible surface
- Surface compaction hazard

Dinnen, loam

- None

Fleecer

- None

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Bavdark

- Low bearing strength

314F—Basincreek-Comad complex, 20 to 50 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,680 to 7,230
Mean annual precipitation: 15 to 19 inches
Frost-free period: 30 to 50 days

Component Description

Basincreek and similar soils

Composition: 60 percent
Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts
Landform: Side slope on mountains
Slope: 20 to 50 percent, west to east aspects
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly coarse sandy loam
Depth to restrictive feature: Lithic bedrock: 40 to 60 inches
Drainage class: Well drained
Parent material: Colluvium derived from granite over residuum weathered from granite
Flooding: None

Soil Survey of Deerlodge National Forest Area, Montana

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 18 inches; gravelly coarse sandy loam
- E and Bw—18 to 38 inches; gravelly coarse sandy loam
- BC—38 to 46 inches; very gravelly sand
- R—46 to 60 inches; bedrock

Comad and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Head slope on mountains

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 8 inches; gravelly loamy coarse sand
- E and Bt—8 to 26 inches; very gravelly loamy coarse sand
- C—26 to 60 inches; very gravelly coarse sand

Additional Components

Rock outcrop: 5 percent

Zonite and similar soils: 5 percent

Management Considerations

Basincreek

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

315F—Stecum-Hiore complex, 20 to 50 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,280 to 7,500

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils

Composition: 50 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on hills

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Hiore and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Head slope on hills

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 14 inches; gravelly coarse sandy loam

Bw—14 to 29 inches; very gravelly coarse sandy loam

BC—29 to 60 inches; very gravelly loamy coarse sand

Additional Components

Rock outcrop: 10 percent

Zonite and similar soils: 6 percent

Stecum, very stony coarse sandy loam and similar soils: 4 percent

Management Considerations

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Hiore

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Stecum, very stony coarse sandy loam

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

316F—Stecum, very bouldery-Rock outcrop-Zonite, very bouldery, complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,280 to 8,460

Mean annual precipitation: 15 to 23 inches

Frost-free period: 50 to 70 days

Component Description

Stecum, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Mountain slopes

Slope: 20 to 50 percent, east to west aspects

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 83 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Rock outcrop

Composition: 25 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Zonite, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Mountain slopes

Slope: 20 to 50 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/common juniper
- Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 83 feet apart, granite

Depth to restrictive feature: Lithic bedrock: 6 to 10 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; very gravelly coarse sandy loam

BC—4 to 9 inches; very gravelly loamy coarse sand

R—9 to 60 inches; bedrock

Additional Components

Caseypeak, very bouldery and similar soils: 10 percent

Hiore, very bouldery and similar soils: 10 percent

Comad, very bouldery and similar soils: 5 percent

Management Considerations

Stecum, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Rock outcrop

- Nonsoil material

Zonite, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Caseypeak, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Hiore, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

317E—Stecum-Caseypeak-Rock outcrop complex, 8 to 35 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,250 to 6,920

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on hills

Slope: 15 to 35 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Caseypeak and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Nose slope on hills

Slope: 8 to 30 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 20 inches
- lithic bedrock: 12 to 24 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

Bw—7 to 14 inches; very gravelly coarse sandy loam

Cr—14 to 19 inches; bedrock

R—19 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Tuggle and similar soils: 10 percent

Basincreek and similar soils: 5 percent

Goldflint and similar soils: 5 percent

Management Considerations

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Caseypeak

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Tuggle

- Shallow soil

Basincreek

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Goldflint

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

319D—Silas, stony-Branham, stony-Tepete complex, 2 to 15 percent slopes

Interpretive focus: Riparian-woodland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,230 to 6,790

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Silas, stony and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Landform: Toeslope on hills

Slope: 4 to 12 percent

Native plant cover type: Forestland

Habitat type(s): Lower subalpine habitat types

Surface layer texture: Sandy clay loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Mixed alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 11.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A1—2 to 18 inches; sandy clay loam

A2—18 to 38 inches; loam

C—38 to 72 inches; loam

Branham, stony and similar soils

Composition: 25 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Toeslope on hills

Slope: 6 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Lower subalpine habitat types

Surface layer texture: Mucky loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 56 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; mucky loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Tepete and similar soils

Composition: 20 percent

Taxonomic class: Loamy, mixed, euic Terric Cryohemists

Landform: Drainageways

Slope: 2 to 6 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 12.4 inches

Typical profile:

Oi—0 to 12 inches; mucky peat

Oe—12 to 26 inches; mucky peat

Agb—26 to 38 inches; fine sandy loam

Cg—38 to 72 inches; gravelly sandy loam

Additional Components

Comad and similar soils: 10 percent

Hiore and similar soils: 10 percent

Management Considerations

Silas, stony

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Branham, stony

- Low bearing strength

Tepete

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Hiore

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

327E—Highrye-Stecum-Wissikihon complex, 15 to 30 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 7,480

Mean annual precipitation: 17 to 21 inches

Frost-free period: 50 to 70 days

Component Description

Highrye and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on south-tending hills

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; coarse sandy loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Stecum and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on south-tending hills

Slope: 25 to 30 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Wissikihon and similar soils

Composition: 20 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Head slope on south-tending hills

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

A—0 to 8 inches; gravelly loamy coarse sand

Bw—8 to 16 inches; gravelly coarse sandy loam

BC—16 to 48 inches; gravelly loamy coarse sand

Cr—48 to 60 inches; bedrock

Additional Components

Minestope and similar soils: 10 percent

Zonite and similar soils: 3 percent

Rock outcrop: 2 percent

Management Considerations

Highrye

- Surface compaction hazard

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Wissikihon

- Cutslope erosion

Minestope

- Shallow soil
- Cutslope erosion

Zonite

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Rock outcrop

- Nonsoil material

328E—Stecum-Zonite-Basincreek complex, 8 to 45 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 6,920

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on hills

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- O_i—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; coarse sandy loam
- BC—7 to 25 inches; very gravelly loamy coarse sand
- Cr—25 to 38 inches; bedrock
- R—38 to 60 inches; bedrock

Zonite and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Nose slope on hills

Slope: 15 to 45 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very gravelly coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 6 to 10 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; very gravelly coarse sandy loam

BC—4 to 9 inches; very gravelly loamy coarse sand

R—9 to 60 inches; bedrock

Basincreek and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform: Base slope on hills

Slope: 8 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; coarse sandy loam

E and Bw—18 to 38 inches; gravelly coarse sandy loam

BC—38 to 46 inches; very gravelly sand

R—46 to 60 inches; bedrock

Additional Components

Bobowic and similar soils: 10 percent

Rock outcrop: 10 percent

Branham and similar soils: 5 percent

Stecum, very stony coarse sandy loam and similar soils: 5 percent

Management Considerations

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

- Cutslope slumping
 - Cutslope erosion
- Basincreek
- Erodible surface
 - Hydrophobic surface layer
 - Surface compaction hazard
- Bobowic
- Steep slopes
 - Erodible surface
 - Hydrophobic surface layer
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material
- Branham
- Steep slopes
 - Erodible surface
- Stecum, very stony coarse sandy loam
- Steep slopes
 - Erodible surface
 - Hydrophobic surface layer
 - Surface compaction hazard
 - Cutslope slumping
 - Cutslope erosion

331C—Mooseflat-Foolhen-Fleecer complex, 2 to 8 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,710 to 7,220

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Mooseflat and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic

Cryaquolls

Landform: Flood plains

Slope: 2 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Mixed alluvium over alluvium derived from granite

Flooding: Occasional

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.7 inches

Typical profile:

Oe—0 to 5 inches; mucky peat

A—5 to 14 inches; loam

Soil Survey of Deerlodge National Forest Area, Montana

Bg—14 to 28 inches; sandy clay loam
2Cg—28 to 72 inches; very gravelly coarse sand

Foolhen and similar soils

Composition: 25 percent
Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls
Landform: Flood plains
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Alluvium
Flooding: Occasional
Water table: Present
Available water capacity to 60-inch depth: Approximately 8.8 inches
Typical profile:
Oe—0 to 4 inches; mucky peat
A—4 to 16 inches; loam
Bw—16 to 40 inches; sandy clay loam
Cg—40 to 72 inches; gravelly coarse sandy loam

Fleecer and similar soils

Composition: 20 percent
Taxonomic class: Coarse-loamy, mixed, superactive Pachic Haplocryolls
Landform: Side slopes of drainageways
Slope: 2 to 8 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Local alluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 7.0 inches
Typical profile:
A—0 to 18 inches; loam
Bw—18 to 34 inches; gravelly coarse sandy loam
BC—34 to 50 inches; gravelly loamy coarse sand
C—50 to 60 inches; gravelly loamy coarse sand

Additional Components

Water: 5 percent

Management Considerations

Mooseflat

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Foolhen

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Fleecer

- None

Water

- Nonsoil material

332D—Bobowic-Goldflint complex, 4 to 25 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,500 to 7,360

Mean annual precipitation: 17 to 22 inches

Frost-free period: 30 to 50 days

Component Description

Bobowic and similar soils

Composition: 65 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocrypts

Landform: Ridges

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 22 to 48 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 11 inches; coarse sandy loam

Bw—11 to 21 inches; gravelly coarse sandy loam

BC—21 to 29 inches; very gravelly loamy coarse sand

Cr—29 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Goldflint and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Ridges

Slope: 4 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Loamy coarse sand

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Somewhat excessively drained
Parent material: Residuum weathered from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.2 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
A—1 to 4 inches; loamy coarse sand
Bw—4 to 9 inches; gravelly loamy coarse sand
BC—9 to 18 inches; very gravelly coarse sand
R—18 to 60 inches; bedrock

Additional Components

Basincreek and similar soils: 10 percent
Branham and similar soils: 8 percent
Rock outcrop: 2 percent

Management Considerations

Bobowic

- Hydrophobic surface layer
- Surface compaction hazard

Goldflint

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Basincreek

- Hydrophobic surface layer
- Surface compaction hazard

Branham

- None

Rock outcrop

- Nonsoil material

333E—Stecum-Hiore-Rock outcrop complex, 15 to 35 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 6,870
Mean annual precipitation: 15 to 17 inches
Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils

Composition: 30 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents
Landform: Side slope on mountains
Slope: 15 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly loamy coarse sand

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Hiore and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Head slope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 14 inches; coarse sandy loam

Bw—14 to 29 inches; very gravelly coarse sandy loam

BC—29 to 60 inches; very gravelly loamy coarse sand

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Bobowic and similar soils: 10 percent

Goldflint and similar soils: 10 percent

Basincreek and similar soils: 5 percent

Branham and similar soils: 5 percent

Stecum, very stony and similar soils: 5 percent

Management Considerations

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

- Cutslope slumping
- Cutslope erosion

Hiore

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Bobowic

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Goldflint

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Basincreek

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Branham

- Steep slopes
- Erodible surface

Stecum, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

335E—Stecum-Goldflint-Branham complex, 12 to 35 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,250 to 6,820

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Stecum and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on hills

Slope: 12 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/common juniper
- Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very gravelly loamy coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Goldflint and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Nose slope on hills

Slope: 12 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; gravelly loamy coarse sand

Bw—4 to 9 inches; gravelly loamy coarse sand

BC—9 to 18 inches; very gravelly coarse sand

R—18 to 60 inches; bedrock

Branham and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Side slope on hills

Slope: 12 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; gravelly coarse sandy loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Additional Components

Peeler, sandy substratum and similar soils: 12 percent

Rock outcrop: 5 percent

Bavdark and similar soils: 3 percent

Management Considerations

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Goldflint

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Branham

- None

Peeler, sandy substratum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Bavdark

- None

338C—Perma cobbly loam, 4 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Perma and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- alluvial fans
- stream terraces

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bw—10 to 32 inches; very gravelly loam
BC—32 to 60 inches; extremely gravelly sandy loam

Additional Components

Perma, greater slopes and similar soils: 5 percent
Quigley and similar soils: 5 percent
Rochester and similar soils: 5 percent

Management Considerations

Perma
• Low bearing strength
Perma, greater slopes
• Low bearing strength
Quigley
• Low bearing strength
• Surface compaction hazard
Rochester
• None

338E—Perma cobbly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000
Mean annual precipitation: 15 to 19 inches
Frost-free period: 70 to 90 days

Component Description

Perma and similar soils

Composition: 85 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls
Landform: Mountains
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; cobbly loam
Bw—10 to 32 inches; very gravelly loam
BC—32 to 60 inches; extremely gravelly sandy loam

Additional Components

Rochester and similar soils: 5 percent
Perma, greater slopes and similar soils: 4 percent
Perma, very cobbly and similar soils: 3 percent
Quigley and similar soils: 3 percent

Management Considerations

Perma

- Low bearing strength

Rochester

- Cutslope slumping
- Cutslope erosion

Perma, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength

Perma, very cobbly

- Low bearing strength

Quigley

- Low bearing strength
- Surface compaction hazard

340E—Peeler gravelly sandy loam, 8 to 25 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,090 to 7,320
Mean annual precipitation: 19 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Peeler and similar soils

Composition: 85 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Glossocryalfs
Landform: Mountainbase on mountains
Slope: 8 to 25 percent
Native plant cover type: Forestland
Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly sandy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.9 inches
Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- Oe—1 to 2 inches; moderately decomposed plant material
- E—2 to 14 inches; gravelly sandy loam
- E/Bt—14 to 24 inches; gravelly coarse sandy loam

Bt—24 to 38 inches; gravelly sandy clay loam

BC—38 to 60 inches; very gravelly loamy coarse sand

Additional Components

Basincreek and similar soils: 12 percent

Foolhen and similar soils: 3 percent

Management Considerations

Peeler

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Basincreek

- Hydrophobic surface layer
- Surface compaction hazard

Foolhen

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

342E—Braziel stony loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 9 inches; stony loam

Bt1—9 to 18 inches; very stony loam

Bt2—18 to 33 inches; very gravelly clay loam

BC—33 to 60 inches; extremely gravelly loam

Additional Components

Rock outcrop: 5 percent
Shanley and similar soils: 4 percent
Perma and similar soils: 3 percent
Shawmut and similar soils: 3 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Shanley

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Shawmut

- Low bearing strength
- Surface compaction hazard

351E—Roy-Shawmut-Danvers complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,600

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roy and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Alluvial fans

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- A—0 to 8 inches; cobbly loam
- Bt—8 to 24 inches; very gravelly clay
- Bk—24 to 60 inches; extremely gravelly clay loam

Danvers and similar soils

Composition: 25 percent

Taxonomic class: Fine, smectitic, frigid Vertic Argiustolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform: Alluvial fans
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Cobbly clay loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Calcareous clayey alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 9.3 inches
Typical profile:
A—0 to 8 inches; cobbly clay loam
Bt—8 to 16 inches; silty clay
Bk—16 to 60 inches; clay loam

Shawmut and similar soils

Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls
Landform: Alluvial fans
Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Cobbly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.4 inches
Typical profile:
A—0 to 6 inches; cobbly loam
Bt—6 to 12 inches; gravelly clay loam
Bk—12 to 60 inches; very gravelly clay loam

Additional Components

Roy, greater slopes and similar soils: 5 percent
Roy, extremely cobbly and similar soils: 5 percent
Shawmut, calcareous and similar soils: 5 percent

Management Considerations

Roy

- Low bearing strength
- Surface compaction hazard

Danvers

- Low bearing strength
- Surface compaction hazard

Shawmut

- Low bearing strength
- Surface compaction hazard

Roy, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Roy, extremely cobbly

- Surface rock fragments
- Low bearing strength
- Surface compaction hazard

Shawmut, calcareous

- Low bearing strength
- Surface compaction hazard

360B—Tepete mucky peat, 1 to 4 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,400 to 7,860

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Tepete and similar soils

Composition: 90 percent

Taxonomic class: Loamy, mixed, euc Terric Cryohemists

Landform: Bogs

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 12.4 inches

Typical profile:

- Oi—0 to 12 inches; mucky peat
- Oe—12 to 26 inches; mucky peat
- Agb—26 to 38 inches; fine sandy loam
- Cg—38 to 72 inches; gravelly sandy loam

Additional Components

Passmore and similar soils: 5 percent

Riverwash: 5 percent

Management Considerations

Tepete

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Passmore

- High water table
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Riverwash

- Nonsoil material

361G—Rock outcrop-Goldflint-Rubble land complex, 45 to 80 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,720 to 8,230

Mean annual precipitation: 18 to 24 inches

Frost-free period: 25 to 50 days

Component Description

Rock outcrop

Composition: 35 percent

Definition: Abundant rock outcrops of strongly indurated quartz monzonite of the Boulder Batholith and associated colluvial boulders.

Landform: None assigned

Goldflint and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Mountainflank, upper third on mountainsides

Slope: 45 to 80 percent

Native plant cover type: Forestland

Habitat type(s): Whitebark pine-subalpine fir

Surface layer texture: Very stony loamy coarse sand

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; very stony loamy coarse sand

Bw—4 to 9 inches; gravelly loamy coarse sand

BC—9 to 18 inches; very gravelly coarse sand

R—18 to 60 inches; bedrock

Rubble land

Composition: 20 percent

Definition: Abundant rock outcrops of strongly indurated quartz monzonite of the Boulder Batholith and associated colluvial boulders.

Landform: None assigned

Additional Components

Stecum and similar soils: 10 percent

Zonite and similar soils: 10 percent

Comad and similar soils: 5 percent

Management Considerations

Rock outcrop

- Nonsoil material

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rubble land

- Nonsoil material

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

362E—Comad-Stecum complex, 8 to 30 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,510 to 8,090

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Comad and similar soils

Composition: 50 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- mountaintop on mountains
- mountainflank, upper third on mountains

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 8 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Whitebark pine-subalpine fir

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; gravelly coarse sandy loam

E and Bt—8 to 26 inches; very gravelly loamy coarse sand

C—26 to 60 inches; very gravelly coarse sand

Stecum and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform:

- mountainflank, upper third on mountains
- mountaintop on mountains

Slope: 8 to 30 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Very stony loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; very stony loamy coarse sand

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Zonite and similar soils: 5 percent

Management Considerations

Comad

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Zonite

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

**363C—Tepete mucky peat, sandy substratum,
2 to 6 percent slopes**

Interpretive focus: Riparian forest

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,120 to 7,960

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Tepete, sandy substratum and similar soils

Composition: 90 percent

Taxonomic class: Sandy, mixed, eucic Terric Cryohemists

Landform: Fens

Slope: 2 to 6 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over mainly sandy alluvium derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 9.7 inches

Typical profile:

Oi—0 to 7 inches; mucky peat

Oe—7 to 18 inches; mucky peat

AC—18 to 24 inches; stratified gravelly coarse sand to fine sandy loam

O'e—24 to 29 inches; mucky peat

Cg1—29 to 54 inches; gravelly coarse sand

2Cg2—54 to 66 inches; loam

3Cg3—66 to 72 inches; gravelly coarse sand

Additional Components

Passmore and similar soils: 10 percent

Management Considerations

Tepete, sandy substratum

- High water table
- High windthrow hazard

- Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Passmore
- High water table
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard

364F—Comad-Goldflint-Rock outcrop complex, 20 to 50 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,820 to 8,150
Mean annual precipitation: 19 to 25 inches
Frost-free period: 20 to 50 days

Component Description

Comad and similar soils

Composition: 35 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: North-facing mountainsides
Slope: 20 to 50 percent, west to east aspects
Native plant cover type: Forestland
Habitat type(s): Subalpine fir/Sitka alder
Surface layer texture: Stony coarse sandy loam
Depth to restrictive feature: None noted
Drainage class: Excessively drained
Parent material: Colluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 2.7 inches
Typical profile:
 Oi—0 to 2 inches; slightly decomposed plant material
 E—2 to 8 inches; stony coarse sandy loam
 E and Bt—8 to 26 inches; very stony loamy coarse sand
 C—26 to 60 inches; extremely stony sand

Goldflint and similar soils

Composition: 20 percent
Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents
Landform: North-facing mountainsides
Slope: 25 to 50 percent, west to east aspects
Native plant cover type: Forestland
Habitat type(s): Subalpine fir/grouse whortleberry
Surface layer texture: Gravelly coarse sandy loam
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Somewhat excessively drained
Parent material: Residuum weathered from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; gravelly coarse sandy loam
- Bw—4 to 9 inches; gravelly loamy coarse sand
- BC—9 to 18 inches; very gravelly coarse sand
- R—18 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Stecum and similar soils: 12 percent

Rubick and similar soils: 10 percent

Zonite and similar soils: 8 percent

Management Considerations

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rubick

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

365F—Stecum-Rock outcrop-Goldflint complex, 30 to 60 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,680 to 8,170

Mean annual precipitation: 17 to 21 inches

Frost-free period: 30 to 55 days

Component Description

Stecum and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: South-facing mountainsides

Slope: 30 to 60 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Whitebark pine

Surface layer texture: Very stony loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; very stony loamy coarse sand

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Goldflint and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: South-facing mountainsides

Slope: 30 to 60 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; gravelly coarse sandy loam
- Bw—4 to 9 inches; gravelly loamy coarse sand
- BC—9 to 18 inches; very gravelly coarse sand
- R—18 to 60 inches; bedrock

Additional Components

- Stecum, gravelly loamy coarse sand and similar soils: 10 percent
- Comad and similar soils: 5 percent

Management Considerations

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Rock outcrop

- Nonsoil material

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Stecum, gravelly loamy coarse sand

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

**366F—Stecum-Rock outcrop-Basincreek complex,
25 to 50 percent slopes**

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,790 to 8,050

Mean annual precipitation: 17 to 22 inches

Frost-free period: 30 to 50 days

Component Description

Stecum and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: South-facing mountainsides

Slope: 30 to 50 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very gravelly loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; very gravelly loamy coarse sand
- BC—7 to 25 inches; very stony coarse sand
- Cr—25 to 38 inches; bedrock
- R—38 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith

Landform: None assigned

Basincreek and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform: Mountainbase on south-tending mountainsides

Slope: 25 to 45 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 18 inches; coarse sandy loam
- E and Bw—18 to 38 inches; gravelly coarse sandy loam
- BC—38 to 46 inches; very gravelly sand
- R—46 to 60 inches; bedrock

Additional Components

Stecum, very stony loamy coarse sand and similar soils: 10 percent

Zonite and similar soils: 10 percent

Management Considerations

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Rock outcrop

- Nonsoil material

Basincreek

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Stecum, very stony loamy coarse sand

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Zonite

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

369E—Rubick, bouldery-Comad, very bouldery, complex, 8 to 30 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,900 to 7,360

Mean annual precipitation: 16 to 18 inches

Frost-free period: 30 to 50 days

Component Description

Rubick, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Nose slope backslope on mountains

Slope: 15 to 30 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 100 to 166 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Very stony colluvium derived from granite

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Oe—2 to 3 inches; moderately decomposed plant material
- E—3 to 21 inches; gravelly sandy loam
- Bw—21 to 37 inches; very stony coarse sandy loam
- BC—37 to 60 inches; very stony loamy coarse sand

Comad, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform:

- nose slope shoulder on mountains
- footslope on ridges

Slope: 8 to 30 percent, east to west aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly coarse sandy loam

Rock fragments on the soil surface: 0.20 to 3.00 percent boulders, 20 to 67 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 8 inches; very gravelly coarse sandy loam
- E and Bt—8 to 26 inches; very gravelly loamy coarse sand
- C—26 to 60 inches; very gravelly coarse sand

Additional Components

Basincreek and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Rubick, bouldery

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad, very bouldery

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Basincreek

- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

370C—Comad-Bobowic complex, 2 to 8 percent slopes, bouldery

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,540 to 5,870

Mean annual precipitation: 17 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Comad, bouldery and similar soils

Composition: 50 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Foothlope on north-facing mountains

Slope: 4 to 8 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 100 to 166 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

O_i—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; coarse sandy loam

E and B_t—8 to 26 inches; very gravelly loamy coarse sand

C—26 to 60 inches; very gravelly coarse sand

Bobowic, bouldery and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocryepts

Landform:

- toeslope on north-facing mountains
- foothlope on swales

Slope: 2 to 6 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/grouse whortleberry

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 100 to 166 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 22 to 48 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 11 inches; coarse sandy loam
- Bw—11 to 21 inches; gravelly coarse sandy loam
- BC—21 to 29 inches; very gravelly loamy coarse sand
- Cr—29 to 34 inches; bedrock
- R—34 to 60 inches; bedrock

Additional Components

Comad, very bouldery and similar soils: 13 percent
Rock outcrop: 2 percent

Management Considerations

- Comad, bouldery
 - Hydrophobic surface layer
 - Surface compaction hazard
- Bobowic, bouldery
 - Hydrophobic surface layer
 - Surface compaction hazard
- Comad, very bouldery
 - Hydrophobic surface layer
 - Surface compaction hazard
- Rock outcrop
 - Nonsoil material

**371G—Stecum-Rock outcrop-Comad complex,
35 to 70 percent slopes**

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,380 to 7,960
Mean annual precipitation: 19 to 24 inches
Frost-free period: 30 to 50 days

Component Description

Stecum and similar soils

Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents
Landform: Mountainflank on mountains
Slope: 35 to 70 percent
Native plant cover type: Forestland
Habitat type(s):

- subalpine fir/grouse whortleberry
- Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very stony loamy coarse sand
Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained
Parent material: Residuum weathered from granite
Flooding: None

Soil Survey of Deerlodge National Forest Area, Montana

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; very stony loamy coarse sand
- BC—7 to 25 inches; very stony coarse sand
- Cr—25 to 38 inches; bedrock
- R—38 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Definition: Strongly indurated quartz monzonite of the Boulder Batholith

Landform: None assigned

Comad and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountainflank on mountains

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/grouse whortleberry

Surface layer texture: Very stony loamy coarse sand

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 8 inches; very stony loamy coarse sand
- E and Bt—8 to 26 inches; very stony loamy coarse sand
- C—26 to 60 inches; extremely stony sand

Additional Components

Goldflint and similar soils: 13 percent

Peeler and similar soils: 2 percent

Management Considerations

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Peeler

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

**372E—Basincreek-Peeler-Stecum complex,
15 to 45 percent slopes**

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,640 to 7,330

Mean annual precipitation: 15 to 17 inches

Frost-free period: 30 to 50 days

Component Description

Basincreek and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform: Side slope on mountains

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; gravelly coarse sandy loam

E and Bw—18 to 38 inches; gravelly coarse sandy loam

BC—38 to 46 inches; very gravelly sand

R—46 to 60 inches; bedrock

Peeler, sandy substratum and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Glossocryalfs

Landform: Side slope on mountains

Slope: 25 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 2 inches; moderately decomposed plant material

E—2 to 14 inches; gravelly coarse sandy loam

E/Bt—14 to 24 inches; gravelly coarse sandy loam

Bt—24 to 38 inches; gravelly sandy clay loam

BC—38 to 60 inches; very gravelly loamy coarse sand

Stecum and similar soils

Composition: 15 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Nose slope on mountains

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches

- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly loamy coarse sand

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Additional Components

Bobowic and similar soils: 10 percent

Peeler and similar soils: 10 percent

Comad and similar soils: 8 percent

Rock outcrop: 5 percent

Wissikihon and similar soils: 2 percent

Management Considerations

Basincreek

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Peeler, sandy substratum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Bobowic

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Peeler

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Wissikihon

- Cutslope slumping
- Cutslope erosion

376E—Tibson very stony loam, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 6,300

Mean annual precipitation: 15 to 23 inches

Frost-free period: 30 to 70 days

Component Description

Tibson and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Calcicryolls

Landform:

- mountainflank on mountains
- mountainbase on mountains

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium over colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- A—0 to 4 inches; very stony loam
- Bw—4 to 8 inches; cobbly loam
- Bk1—8 to 14 inches; very cobbly loam
- Bk2—14 to 60 inches; very cobbly loam

Additional Components

- Levengood and similar soils: 5 percent
- Libeg and similar soils: 5 percent
- Maciver and similar soils: 5 percent

Management Considerations

Tibson

- Low bearing strength
- Surface compaction hazard

Levengood

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Maciver

- Low bearing strength
- Surface compaction hazard

**379E—Ambrant-Rochester-Rock outcrop complex,
15 to 35 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Ambrant and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Bouldery coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 20 inches; bouldery coarse sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

E and Bt—20 to 30 inches; gravelly sandy loam

2C—30 to 60 inches; very gravelly coarse sand

Rochester and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Very bouldery coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A—2 to 13 inches; very bouldery coarse sandy loam

C1—13 to 23 inches; very stony loamy sand

C2—23 to 60 inches; very stony loamy sand

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Bignell and similar soils: 10 percent

Management Considerations

Ambrant

- None

Rochester

- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Bignell

- Low bearing strength
- Surface compaction hazard

379F—Ambrant-Rochester-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Ambrant and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Bouldery coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 20 inches; bouldery coarse sandy loam

E and Bt—20 to 30 inches; gravelly sandy loam

2C—30 to 60 inches; very gravelly coarse sand

Rochester and similar soils

Composition: 30 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry-bluebunch wheatgrass phase

Surface layer texture: Very bouldery coarse sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A—2 to 13 inches; very bouldery coarse sandy loam

C1—13 to 23 inches; very stony loamy sand

C2—23 to 60 inches; very stony loamy sand

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Bignell and similar soils: 10 percent

Management Considerations

Ambrant

- Steep slopes
- Erodible surface

Rochester

- Steep slopes
- Erodible surface

- Cutslope slumping
 - Cutslope erosion
- Rock outcrop
- Nonsoil material
- Bignell
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

384E—Minestope, extremely bouldery-Branham, extremely bouldery-Rock outcrop complex, 8 to 35 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 6,810

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Minestope, extremely bouldery and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Ustic Haplocryolls

Landform: Side slope on generally south-facing hills

Slope: 8 to 35 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 3 to 25 percent boulders, 10 to 33 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 20 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.3 inches

Typical profile:

- A—0 to 6 inches; gravelly coarse sandy loam
- Bw—6 to 11 inches; gravelly coarse sandy loam
- BC—11 to 17 inches; very gravelly loamy coarse sand
- Cr—17 to 26 inches; bedrock
- R—26 to 60 inches; bedrock

Branham, extremely bouldery and similar soils

Composition: 25 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Side slope on generally south-facing hills

Slope: 15 to 35 percent, east to northwest aspects

Native plant cover type: Rangeland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 3 to 25 percent boulders, 10 to 33 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 56 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 7 inches; coarse sandy loam

Bw—7 to 17 inches; gravelly coarse sandy loam

BC—17 to 26 inches; gravelly coarse sandy loam

Cr—26 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith, often containing dikes of very strongly indurated, finer-grained aplites.

Landform: None assigned

Additional Components

Highrye, very bouldery and similar soils: 9 percent

Fleecer, very bouldery and similar soils: 5 percent

Bavdark, very stony and similar soils: 1 percent

Management Considerations

Minestope, extremely bouldery

- Shallow soil
- Cutslope erosion

Branham, extremely bouldery

- None

Rock outcrop

- Nonsoil material

Highrye, very bouldery

- Steep slopes
- Erodible surface
- Surface compaction hazard

Fleecer, very bouldery

- None

Bavdark, very stony

- Surface compaction hazard

385D—Highrye-Beeftrail complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 6,840

Mean annual precipitation: 17 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Highrye and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:

- interfluvium on hills
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 11 inches; gravelly sandy clay loam
- Bt—11 to 32 inches; gravelly sandy clay loam
- BC—32 to 46 inches; gravelly coarse sandy loam
- C—46 to 56 inches; very gravelly coarse sand
- Cr—56 to 60 inches; bedrock

Beeftrail and similar soils

Composition: 25 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform:

- side slope on hills
- ridges

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

- A—0 to 7 inches; sandy loam
- Bw—7 to 14 inches; gravelly coarse sandy loam
- BC—14 to 26 inches; gravelly loamy coarse sand
- Cr—26 to 35 inches; bedrock
- R—35 to 60 inches; bedrock

Additional Components

Fleecer and similar soils: 10 percent
Highrye, greater slopes and similar soils: 8 percent
Zonite and similar soils: 5 percent
Rock outcrop: 2 percent

Management Considerations

Highrye

- Surface compaction hazard

Beeftrail

- None

Fleecer

- None

Highrye, greater slopes

- Surface compaction hazard

Zonite

- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

387E—Danaher-Loberg complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 7,500
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils

Composition: 55 percent
Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs
Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent
Native plant cover type: Forestland
Habitat type(s):

- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey colluvium derived from igneous rock
Flooding: None
Available water capacity to 60-inch depth: Approximately 8.9 inches
Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; loam

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Bt/E—6 to 13 inches; clay loam

Bt—13 to 60 inches; clay loam

Loberg and similar soils

Composition: 30 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- subalpine fir/blue huckleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; gravelly loam

Bt/E—10 to 18 inches; very gravelly clay loam

Bt1—18 to 32 inches; very gravelly clay

Bt2—32 to 48 inches; very gravelly clay loam

Bt3—48 to 60 inches; very cobbly clay loam

Additional Components

Relyea and similar soils: 4 percent

Rock outcrop: 4 percent

Worock and similar soils: 4 percent

Mannixlee and similar soils: 3 percent

Management Considerations

Danaher

- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Relyea

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

Mannixlee

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

392E—Whitore cobbly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,200 to 7,800

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Very calcareous gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

AB—1 to 9 inches; cobbly loam

Bk—9 to 60 inches; very cobbly clay loam

Additional Components

Helmville and similar soils: 8 percent

Rock outcrop: 7 percent

Management Considerations

Whitore

- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

392F—Bobowic, very bouldery-Comad, very bouldery-Rock outcrop complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,300 to 7,480

Mean annual precipitation: 15 to 17 inches

Frost-free period: 30 to 50 days

Component Description

Bobowic, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocrypts

Landform: Side slope on mountains

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 77 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 22 to 48 inches

Drainage class: Well drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 11 inches; coarse sandy loam

Bw—11 to 21 inches; gravelly coarse sandy loam

BC—21 to 29 inches; very gravelly loamy coarse sand

Cr—29 to 34 inches; bedrock

R—34 to 60 inches; bedrock

Comad, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Head slope on mountains

Slope: 20 to 45 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 77 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; gravelly coarse sandy loam

E and Bt—8 to 26 inches; very gravelly loamy coarse sand

C—26 to 60 inches; very gravelly coarse sand

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Goldflint, bouldery and similar soils: 10 percent

Stecum and similar soils: 10 percent

Comad, stony coarse sandy loam and similar soils: 5 percent

Hiore and similar soils: 5 percent

Management Considerations

Bobowic, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad, very bouldery

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Goldflint, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Comad, stony coarse sandy loam

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Hiore

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

392Fd—Whitore cobbly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,200 to 7,800

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocrypts

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Very calcareous gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

AB—1 to 9 inches; cobbly loam

Bk—9 to 60 inches; very cobbly clay loam

Additional Components

Helmville and similar soils: 8 percent

Rock outcrop: 7 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

394E—Minestope, very stony-Beeftail, very stony-Rock outcrop complex, 8 to 30 percent slopes

Interpretive focus: Rangeland and forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,220 to 6,300

Mean annual precipitation: 13 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Minestope, very stony and similar soils

Composition: 40 percent

Taxonomic class: Sandy-skeletal, mixed, shallow Ustic Haplocryolls

Landform: Side slope on south-tending hills

Slope: 8 to 30 percent, east to west aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 10 to 20 inches
- lithic bedrock: 20 to 40 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.3 inches

Typical profile:

A—0 to 6 inches; gravelly coarse sandy loam

Bw—6 to 11 inches; gravelly coarse sandy loam

BC—11 to 17 inches; very gravelly loamy coarse sand

Cr—17 to 26 inches; bedrock

R—26 to 60 inches; bedrock

Beeftrail, very stony and similar soils

Composition: 30 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on south-tending hills

Slope: 8 to 30 percent, east to west aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

A—0 to 7 inches; gravelly coarse sandy loam

Bw—7 to 14 inches; gravelly coarse sandy loam

BC—14 to 26 inches; gravelly loamy coarse sand

Cr—26 to 35 inches; bedrock

R—35 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Minestope, very stony, cool and similar soils: 10 percent
Zonite, extremely stony and similar soils: 5 percent

Management Considerations

Minestope, very stony

- Shallow soil
- Cutslope erosion

Beeftrail, very stony

- Cutslope erosion

Rock outcrop

- Nonsoil material

Minestope, very stony, cool

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Zonite, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

395E—Beeftrail-Stecum-Wissikihon complex, 8 to 25 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,410 to 7,610

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Beeftrail and similar soils

Composition: 30 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on hills

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- A—0 to 7 inches; coarse sandy loam
- Bw—7 to 14 inches; gravelly coarse sandy loam
- BC—14 to 26 inches; gravelly loamy coarse sand
- Cr—26 to 35 inches; bedrock
- R—35 to 60 inches; bedrock

Stecum and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Nose slope on hills

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Stony loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; stony loamy coarse sand
- BC—7 to 25 inches; very stony coarse sand
- Cr—25 to 38 inches; bedrock
- R—38 to 60 inches; bedrock

Wissikihon and similar soils

Composition: 20 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Base slope on hills

Slope: 15 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bw—8 to 16 inches; gravelly coarse sandy loam
- BC—16 to 48 inches; gravelly loamy coarse sand
- Cr—48 to 60 inches; bedrock

Additional Components

Minestope and similar soils: 10 percent

Rock outcrop: 10 percent

Basincreek and similar soils: 5 percent

Management Considerations

Beeftrail

- Cutslope slumping
- Cutslope erosion

Stecum

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Wissikihon

- Cutslope slumping
- Cutslope erosion

Minestope

- Shallow soil
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

Basincreek

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

399D—Bignell-Yreka complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly loam
- E/Bt—9 to 15 inches; very gravelly loam
- Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Crow and similar soils: 5 percent

Elve and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Rock outcrop

- Nonsoil material

399E—Bignell-Yreka complex, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly clay loam
- E/Bt—9 to 15 inches; very gravelly loam
- Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Crow and similar soils: 6 percent
Elve and similar soils: 5 percent
Rock outcrop: 4 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Rock outcrop

- Nonsoil material

399F—Bignell-Yreka complex, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly clay loam

Soil Survey of Deerlodge National Forest Area, Montana

E/Bt—9 to 15 inches; very gravelly loam

Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 5 inches; gravelly loam

E/Bt—5 to 19 inches; very gravelly loam

Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Crow and similar soils: 5 percent

Elve and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Bignell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Elve

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

406E—Stecum, very bouldery-Comad-Rock outcrop complex, 8 to 30 percent slopes

Interpretive focus: Forest

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,310 to 7,770

Mean annual precipitation: 15 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Stecum, very bouldery and similar soils

Composition: 50 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Mountainflank on south-tending mountainsides

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly loamy coarse sand

Rock fragments on the soil surface: 0.10 to 5.00 percent boulders, 13 to 40 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; gravelly loamy coarse sand
- BC—7 to 25 inches; very stony coarse sand
- Cr—25 to 38 inches; bedrock
- R—38 to 60 inches; bedrock

Comad and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountainbase on south-tending mountainsides

Slope: 8 to 25 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 8 inches; gravelly loamy coarse sand
- E and Bt—8 to 26 inches; very gravelly loamy coarse sand
- C—26 to 60 inches; very gravelly coarse sand

Rock outcrop

Composition: 15 percent

Definition: Moderately to strongly indurated quartz monzonite of the Boulder Batholith.

Landform: None assigned

Additional Components

Goldflint and similar soils: 10 percent

Stecum, very stony loamy coarse sand and similar soils: 5 percent

Management Considerations

Stecum, very bouldery

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Comad

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

Rock outcrop

- Nonsoil material

Goldflint

- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

Stecum, very stony loamy coarse sand

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope erosion

**408E—Stecum-Mooseflat-Basin creek complex,
4 to 30 percent slopes, very bouldery**

Interpretive focus: Forestland and riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,310 to 6,230

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Stecum, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Backslope on mountains

Slope: 12 to 30 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 83 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Mooseflat, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- drainageways
- toeslope on mountains

Slope: 4 to 12 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir series

Surface layer texture: Mucky peat

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 83 feet apart, granite

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Mixed alluvium over alluvium derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.7 inches

Typical profile:

Oe—0 to 5 inches; mucky peat

A—5 to 14 inches; silt loam

Bg—14 to 28 inches; sandy clay loam

2Cg—28 to 72 inches; very gravelly coarse sand

Basincreek, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform:

- footslope on mountains
- terraces

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 20 to 83 feet apart, granite

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; sandy loam

E and Bw—18 to 38 inches; gravelly coarse sandy loam

BC—38 to 46 inches; very gravelly sand

R—46 to 60 inches; bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Stecum, very bouldery

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Mooseflat, very bouldery

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Basincreek, very bouldery

- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

415F—Stecum-Goldflint-Basincreek complex, 20 to 50 percent slopes, extremely stony

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,040 to 7,970

Mean annual precipitation: 14 to 17 inches

Frost-free period: 30 to 50 days

Component Description

Stecum, extremely stony and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Mountainflank on north-tending mountainsides

Slope: 20 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/kinnikinnick

Surface layer texture: Gravelly loamy coarse sand

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, granite

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly loamy coarse sand

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Goldflint, extremely stony and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Lithic Cryorthents

Landform: Mountainflank on north-tending mountainsides

Slope: 20 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very gravelly loamy coarse sand

Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, granite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; very gravelly loamy coarse sand

Bw—4 to 9 inches; gravelly loamy coarse sand

BC—9 to 18 inches; very gravelly coarse sand

R—18 to 60 inches; bedrock

Basincreek, extremely stony and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocrypts

Landform: Mountainflank on north-tending mountainsides

Slope: 20 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/kinnikinnick

Surface layer texture: Very gravelly loamy coarse sand

Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, granite

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; very gravelly loamy coarse sand

E and Bw—18 to 38 inches; gravelly coarse sandy loam

BC—38 to 46 inches; very gravelly sand

R—46 to 60 inches; bedrock

Additional Components

Basincreek, very stony, lesser slopes and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Stecum, extremely stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Goldflint, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Basincreek, extremely stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Basincreek, very stony, lesser slopes

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rock outcrop

- Nonsoil material

416E—Beeftrail-Fleecer-Stecum complex, 8 to 45 percent slopes

Interpretive focus: Rangeland and forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 6,580

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Beeftrail and similar soils

Composition: 25 percent

Taxonomic class: Sandy, mixed Ustic Haplocryolls

Landform: Side slope on north-tending hills

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Rangeland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 56 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- A—0 to 7 inches; coarse sandy loam
- Bw—7 to 14 inches; gravelly coarse sandy loam
- BC—14 to 26 inches; gravelly loamy coarse sand
- Cr—26 to 35 inches; bedrock
- R—35 to 60 inches; bedrock

Fleecer and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Landform: Head slope on north-tending hills

Slope: 8 to 25 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Local alluvium derived from granite and/or colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.0 inches

Typical profile:

- A—0 to 18 inches; sandy loam
- Bw—18 to 34 inches; gravelly coarse sandy loam
- BC—34 to 50 inches; gravelly loamy coarse sand
- C—50 to 60 inches; gravelly loamy coarse sand

Stecum and similar soils

Composition: 20 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform: Side slope on north-tending hills

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loamy coarse sand

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; gravelly loamy coarse sand

Soil Survey of Deerlodge National Forest Area, Montana

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Highrye and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform: Side slope on north-tending hills

Slope: 15 to 35 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 11 inches; coarse sandy loam

Bt—11 to 32 inches; gravelly sandy clay loam

BC—32 to 46 inches; gravelly coarse sandy loam

C—46 to 56 inches; very gravelly coarse sand

Cr—56 to 60 inches; bedrock

Additional Components

Rock outcrop: 10 percent

Goldflint and similar soils: 5 percent

Wissikihon and similar soils: 5 percent

Management Considerations

Beeftrail

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Fleecer

- None

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Highrye

- Surface compaction hazard

Rock outcrop

- Nonsoil material

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard

- Cutslope slumping
 - Cutslope erosion
- Wissikihon
- Cutslope slumping
 - Cutslope erosion

419E—Peeler-Comad complex, 8 to 30 percent slopes, very stony

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,120 to 7,430
Mean annual precipitation: 19 to 22 inches
Frost-free period: 30 to 50 days

Component Description

Peeler, very stony and similar soils

Composition: 45 percent
Taxonomic class: Fine-loamy, mixed, superactive Ustic Glossocryalfs
Landform: Mountainflank on north-tending mountainsides
Slope: 12 to 30 percent, west to southeast aspects
Native plant cover type: Forestland
Habitat type(s): Spruce/cleft-leaf groundsel
Surface layer texture: Gravelly loamy coarse sand
Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, granite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.9 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
Oe—1 to 2 inches; slightly decomposed plant material
E—2 to 14 inches; gravelly loamy coarse sand
E/Bt—14 to 24 inches; gravelly coarse sandy loam
Bt—24 to 38 inches; gravelly sandy clay loam
BC—38 to 60 inches; very gravelly loamy coarse sand

Comad, very stony and similar soils

Composition: 40 percent
Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents
Landform: Mountainflank on north-tending mountainsides
Slope: 8 to 30 percent, west to southeast aspects
Native plant cover type: Forestland
Habitat type(s): Lodgepole pine/grouse whortleberry
Surface layer texture: Gravelly loamy coarse sand
Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, granite
Depth to restrictive feature: None noted
Drainage class: Excessively drained

Parent material: Colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 8 inches; gravelly loamy coarse sand

E and Bt—8 to 26 inches; very gravelly loamy coarse sand

C—26 to 60 inches; very gravelly coarse sand

Additional Components

Goldflint and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Peeler, very stony

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Comad, very stony

- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Goldflint

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Rock outcrop

- Nonsoil material

420B—Dinnen-Wissikihon-Shewag complex, 1 to 6 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,280 to 6,690

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Dinnen and similar soils

Composition: 45 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform: Alluvial fans

Slope: 1 to 6 percent

Native plant cover type: Rangeland

Habitat type(s): None noted
Surface layer texture: Coarse sandy loam
Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches
Drainage class: Well drained
Parent material: Alluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 6.4 inches
Typical profile:
A—0 to 9 inches; coarse sandy loam
Bw—9 to 21 inches; gravelly coarse sandy loam
BC—21 to 41 inches; gravelly coarse sandy loam
C—41 to 53 inches; gravelly loamy coarse sand
Cr—53 to 60 inches; bedrock

Wissikihon and similar soils

Composition: 35 percent
Taxonomic class: Sandy, mixed Ustic Haplocryolls
Landform: Alluvial fans
Slope: 1 to 4 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Coarse sandy loam
Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches
Drainage class: Well drained
Parent material: Alluvium derived from granite
Flooding: None
Available water capacity to 60-inch depth: Approximately 3.0 inches
Typical profile:
A—0 to 8 inches; coarse sandy loam
Bw—8 to 16 inches; gravelly coarse sandy loam
BC—16 to 48 inches; gravelly loamy coarse sand
Cr—48 to 60 inches; bedrock

Shewag and similar soils

Composition: 20 percent
Taxonomic class: Sandy, mixed Oxyaquic Haplocryolls
Landform:

- alluvial fans
- swales

Slope: 1 to 4 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Mucky peat
Depth to restrictive feature: None noted
Drainage class: Moderately well drained
Parent material: Mixed alluvium over alluvium derived from granite
Flooding: None
Water table: Present
Available water capacity to 60-inch depth: Approximately 4.5 inches
Typical profile:
Oe—0 to 2 inches; mucky peat
A—2 to 8 inches; sandy loam
Bw—8 to 14 inches; coarse sandy loam
2C—14 to 72 inches; gravelly loamy coarse sand

Management Considerations

Dinnen

- None

Wissikihon

- None

Shewag

- Hydrophobic surface layer
- Surface compaction hazard

421B—Shewag-Shewag, moderately well drained complex, 1 to 4 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,270 to 6,380

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Shewag and similar soils

Composition: 75 percent

Taxonomic class: Sandy-skeletal, mixed Oxyaquic Haplocryolls

Landform: Lower part of alluvial fans

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Mixed alluvium over alluvium derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

A—0 to 8 inches; sandy loam

Bw—8 to 14 inches; sandy loam

2C—14 to 72 inches; very gravelly coarse sand

Shewag, moderately well drained and similar soils

Composition: 20 percent

Taxonomic class: Sandy, mixed Oxyaquic Haplocryolls

Landform: Upper part of alluvial fans

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Mixed alluvium over alluvium derived from granite

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- Oe—0 to 2 inches; mucky peat
- A—2 to 8 inches; sandy loam
- Bw—8 to 14 inches; coarse sandy loam
- 2C—14 to 72 inches; gravelly loamy coarse sand

Additional Components

Fleecer and similar soils: 5 percent

Management Considerations

Shewag

- High water table

Shewag, moderately well drained

- Hydrophobic surface layer
- Surface compaction hazard

Fleecer

- None

421F—Perma-Whitlash complex, 35 to 60 percent slopes, very stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Perma, very stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 7 inches; cobbly loam
- Bw—7 to 36 inches; very cobbly loam
- BC—36 to 60 inches; extremely gravelly loam

Whitlash, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- A—0 to 3 inches; very cobbly loam
- Bw—3 to 11 inches; extremely gravelly loam
- R—11 to 60 inches; unweathered bedrock

Additional Components

Connieo, very bouldery and similar soils: 4 percent

Whitlash, gravelly loam, very stony and similar soils: 4 percent

Baxton, bouldery and similar soils: 3 percent

Breeton and similar soils: 2 percent

Rock outcrop, volcanic, sandstone: 2 percent

Management Considerations

Perma, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitlash, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Connieo, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitlash, gravelly loam, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Baxton, bouldery

- Steep slopes
- Erodible surface

Breeton

- Low bearing strength

Rock outcrop, volcanic, sandstone

- Nonsoil material

423D—Fleecer-Dinnen complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,230 to 7,220

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Fleecer and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Landform: Side slope on hills

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Local alluvium derived from granite and/or colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A—0 to 24 inches; sandy loam

Bw—24 to 34 inches; gravelly coarse sandy loam

BC—34 to 50 inches; gravelly loamy coarse sand

C—50 to 60 inches; gravelly loamy coarse sand

Dinnen and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform:

- nose slope on hills
- interfluvium on hills

Slope: 6 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Colluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.4 inches

Typical profile:

- A—0 to 9 inches; gravelly coarse sandy loam
- Bw—9 to 21 inches; gravelly coarse sandy loam
- BC—21 to 41 inches; gravelly coarse sandy loam
- C—41 to 53 inches; gravelly loamy coarse sand
- Cr—53 to 60 inches; bedrock

Additional Components

Bavdark and similar soils: 10 percent
Rock outcrop: 5 percent

Management Considerations

Fleecer

- None

Dinnen

- None

Bavdark

- None

Rock outcrop

- Nonsoil material

440D—Roundor-Lap complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,400

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roundor and similar soils

Composition: 55 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Calciustolls

Landform:

- toeslope on hills
- footslope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Residuum weathered from sandstone and siltstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.6 inches

Typical profile:

- A—0 to 6 inches; loam
- Bw—6 to 12 inches; loam
- Bk—12 to 44 inches; loam
- Cr—44 to 60 inches; unweathered bedrock

Lap and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calciustolls

Landform:

- toeslope on hills
- footslope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bk—8 to 16 inches; very channery loam
- R—16 to 26 inches; unweathered bedrock

Additional Components

Boxwell and similar soils: 5 percent

Rock outcrop: 5 percent

Rothiemay and similar soils: 5 percent

Management Considerations

Roundor

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Boxwell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rothiemay

- Low bearing strength
- Surface compaction hazard

442D—Braziel-Tolbert complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Tolbert and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- footslope on mountains
- toeslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- A—0 to 5 inches; gravelly loam
- Bt—5 to 12 inches; very gravelly clay loam
- R—12 to 60 inches; unweathered bedrock

Additional Components

Perma and similar soils: 5 percent

Rock outcrop: 5 percent

Shanley and similar soils: 5 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Tolbert

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Rock outcrop

- Nonsoil material

Shanley

- Low bearing strength
- Surface compaction hazard

442E—Braziel-Tolbert complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Stony loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; stony loam
- Bt1—8 to 17 inches; very gravelly clay loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Tolbert, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 0 to 3 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Residuum weathered from igneous rock
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.7 inches
Typical profile:
A—0 to 5 inches; very stony loam
Bt—5 to 12 inches; very gravelly loam
R—12 to 60 inches; unweathered bedrock

Additional Components

Braziel, greater slopes, very stony and similar soils: 3 percent
Crackerville, very stony and similar soils: 3 percent
Perma, very stony and similar soils: 3 percent
Rock outcrop: 3 percent
Roy, very stony and similar soils: 3 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Tolbert, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Braziel, greater slopes, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Crackerville, very stony

- Low bearing strength
- Surface compaction hazard

Perma, very stony

- Low bearing strength

Rock outcrop

- Nonsoil material

Roy, very stony

- Low bearing strength
- Surface compaction hazard

442F—Braziel-Tolbert complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Tolbert and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- A—0 to 5 inches; gravelly loam
- Bt—5 to 12 inches; very gravelly clay loam
- R—12 to 60 inches; unweathered bedrock

Additional Components

Perma and similar soils: 5 percent

Rock outcrop: 5 percent

Shanley and similar soils: 5 percent

Management Considerations

Braziel

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tolbert

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Perma
- Steep slopes
 - Erodible surface
 - Low bearing strength
- Rock outcrop
- Nonsoil material
- Shanley
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

446D—Danvers-Roy complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,400

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Danvers and similar soils

Composition: 50 percent

Taxonomic class: Fine, smectitic, frigid Vertic Argiustolls

Landform:

- alluvial fans
- stream terraces

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.5 inches

Typical profile:

- A—0 to 5 inches; clay loam
- Bt—5 to 17 inches; silty clay loam
- Btk—17 to 28 inches; clay loam
- Bk—28 to 60 inches; gravelly clay loam

Roy and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- toeslope on alluvial fans
- footslope on alluvial fans
- stream terraces

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Clayey and cobbly alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 9 inches; loam
Bt—9 to 38 inches; very cobbly clay loam
Bck—38 to 60 inches; very cobbly clay loam

Additional Components

Fergus and similar soils: 5 percent
Shanley and similar soils: 5 percent
Winspect and similar soils: 5 percent

Management Considerations

Danvers

- Low bearing strength
- Surface compaction hazard

Roy

- Low bearing strength
- Surface compaction hazard

Fergus

- Low bearing strength
- Surface compaction hazard

Shanley

- Low bearing strength
- Surface compaction hazard

Winspect

- Low bearing strength
- Surface compaction hazard

446E—Danvers-Roy complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 5,400
Mean annual precipitation: 15 to 19 inches
Frost-free period: 70 to 90 days

Component Description

Danvers and similar soils

Composition: 50 percent
Taxonomic class: Fine, smectitic, frigid Vertic Argiustolls
Landform:

- alluvial fans
- stream terraces

Slope: 15 to 35 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Clay loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.5 inches

Typical profile:

A—0 to 5 inches; clay loam

Bt—5 to 17 inches; silty clay loam

Btk—17 to 28 inches; clay loam

Bk—28 to 60 inches; gravelly clay loam

Roy and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- footslope on alluvial fans
- backslope on alluvial fans
- stream terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey and cobbly alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 9 inches; loam

Bt—9 to 38 inches; very cobbly clay loam

BCk—38 to 60 inches; very cobbly clay loam

Additional Components

Fergus and similar soils: 5 percent

Shanley and similar soils: 5 percent

Winspect and similar soils: 5 percent

Management Considerations

Danvers

- Low bearing strength
- Surface compaction hazard

Roy

- Low bearing strength
- Surface compaction hazard

Fergus

- Low bearing strength
- Surface compaction hazard

Shanley

- Low bearing strength
- Surface compaction hazard

Winspect

- Low bearing strength
- Surface compaction hazard

451E—Shawmut very bouldery loam, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,800

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Shawmut and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very bouldery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 6 inches; very bouldery loam

Bt—6 to 18 inches; very bouldery loam

Bk1—18 to 40 inches; very bouldery loam

Bk2—40 to 60 inches; extremely bouldery sandy loam

Additional Components

Poronto and similar soils: 4 percent

Rochester and similar soils: 4 percent

Shawmut, greater slopes and similar soils: 4 percent

Winspect and similar soils: 3 percent

Management Considerations

Shawmut

- Surface boulders
- Low bearing strength
- Surface compaction hazard

Poronto

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rochester

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Shawmut, greater slopes

- Steep slopes
- Erodible surface

- Surface boulders
 - Low bearing strength
 - Surface compaction hazard
- Winspect
- Low bearing strength
 - Surface compaction hazard

482E—Elve gravelly loam, dry, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; gravelly loam
- Bw/E—11 to 18 inches; very gravelly loam
- BC—18 to 60 inches; very gravelly loam

Additional Components

Loberg and similar soils: 5 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Elve

- Low bearing strength

Loberg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

482F—Elve gravelly loam, dry, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,000

Mean annual precipitation: 20 to 25 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; gravelly loam
- Bw/E—11 to 18 inches; very gravelly loam
- BC—18 to 60 inches; very gravelly loam

Additional Components

Loberg and similar soils: 5 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface
- Low bearing strength

Loberg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

487D—Danaher-Loberg-Elve complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; gravelly sandy loam

Bt/E—18 to 24 inches; loam

Bt—24 to 60 inches; gravelly clay

Loberg and similar soils

Composition: 30 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/dwarf huckleberry

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 28 inches; gravelly sandy loam

Bt/E—28 to 34 inches; very cobbly sandy clay

Bt1—34 to 50 inches; very cobbly clay

Bt2—50 to 60 inches; very cobbly clay loam

Elve and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 16 inches; very gravelly sandy loam

Bw/E—16 to 36 inches; extremely gravelly sandy loam

BC—36 to 60 inches; extremely cobbly sandy loam

Additional Components

Foolhen and similar soils: 5 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Danaher

- Low bearing strength

Loberg

- Low bearing strength

Elve

- Low bearing strength

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

487E—Danaher-Loberg-Elve complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 28 inches

Frost-free period: 30 to 70 days

Component Description

Danaher and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Glossocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/dwarf huckleberry

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 18 inches; gravelly sandy loam

Bt/E—18 to 24 inches; loam

Bt—24 to 60 inches; gravelly clay

Loberg and similar soils

Composition: 30 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/blue huckleberry
- Douglas-fir/dwarf huckleberry
- subalpine fir/twinflower

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 28 inches; gravelly sandy loam

Bt/E—28 to 34 inches; very cobbly sandy clay

Bt1—34 to 50 inches; very cobbly clay

Bt2—50 to 60 inches; very cobbly clay loam

Elve and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 16 inches; very gravelly sandy loam

Bw/E—16 to 36 inches; extremely gravelly sandy loam

BC—36 to 60 inches; extremely cobbly sandy loam

Additional Components

Foolhen and similar soils: 5 percent

Rock outcrop: 5 percent

Worock and similar soils: 5 percent

Management Considerations

Danaher

- Low bearing strength

Loberg

- Low bearing strength

Elve

- Low bearing strength

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

488E—Whitecow gravelly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Bk1—6 to 25 inches; very gravelly loam
- Bk2—25 to 60 inches; extremely gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Trapps and similar soils: 5 percent

Management Considerations

Whitecow

- Low bearing strength
- Surface compaction hazard

Lap

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

488F—Whitecow gravelly loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bk1—4 to 34 inches; very gravelly loam
- Bk2—34 to 60 inches; extremely gravelly loam

Additional Components

Lap and similar soils: 5 percent

Rock outcrop: 5 percent

Trapps and similar soils: 5 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Lap

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

**492F—Whitore, dry-Rock outcrop complex,
35 to 60 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,800

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Very calcareous gravelly colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

AB—1 to 9 inches; gravelly loam

Bk—9 to 60 inches; very cobbly clay loam

Rock outcrop

Composition: 20 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Additional Components

Helmville and similar soils: 5 percent

Loberg and similar soils: 5 percent

Relyea and similar soils: 5 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Loberg

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Relyea

- Low bearing strength
- Surface compaction hazard

497C—Waldbillig gravelly ashy loam, 2 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,900 to 7,800

Mean annual precipitation: 30 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Waldbillig and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: Moraines

Slope: 2 to 8 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over gravelly till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 8 inches; gravelly ashy loam

2E and Bt1—8 to 42 inches; very gravelly sandy loam

2E and Bt2—42 to 60 inches; very gravelly sandy loam

Additional Components

Worock and similar soils: 7 percent

Evvaro and similar soils: 4 percent

Helmville and similar soils: 4 percent

Management Considerations

Waldbillig

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

Evaro

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

497E—Waldbillig gravelly ashy loam, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,900 to 7,800

Mean annual precipitation: 30 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Waldbillig and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocryepts

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over gravelly till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 8 inches; gravelly ashy loam

2E and Bt1—8 to 42 inches; very gravelly sandy loam

2E and Bt2—42 to 60 inches; very gravelly sandy loam

Additional Components

Worock and similar soils: 7 percent

Evaro and similar soils: 4 percent

Helmville and similar soils: 4 percent

Management Considerations

Waldbillig

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

Evaro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Helmville

- Low bearing strength
- Surface compaction hazard

499E—Bignell-Yreka complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly clay loam
- E/Bt—9 to 15 inches; very gravelly loam
- Bt—15 to 60 inches; very gravelly clay

Yreka and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass-bluebunch wheatgrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; gravelly loam
- E/Bt—5 to 19 inches; very gravelly loam
- Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Crow and similar soils: 6 percent

Rock outcrop: 6 percent

Trapps and similar soils: 3 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

503F—Bridger-Eastridge-Hungryhill complex, 25 to 60 percent slopes, very stony

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,270 to 7,250

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Bridger, very stony and similar soils

Composition: 35 percent

Taxonomic class: Fine, mixed, superactive Ustic Argicryolls

Landform: Backslope on forested south-tending hills

Slope: 25 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 10 to 50 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.0 inches

Typical profile:

A1—0 to 3 inches; loam

A2—3 to 9 inches; loam

Bt—9 to 17 inches; clay

Bk—17 to 34 inches; loam

C—34 to 60 inches; sandy loam

Eastridge, very stony and similar soils

Composition: 20 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on forested steeper north-tending hills

Slope: 30 to 60 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 10 to 50 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Hungryhill, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- shoulder on grassy south-tending hills
- backslope on grassy south-tending hills

Slope: 30 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

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Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders, 10 to 50 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Additional Components

Bullrey and similar soils: 10 percent

Rock outcrop: 10 percent

Euell, very stony and similar soils: 5 percent

Management Considerations

Bridger, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Eastridge, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hungryhill, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bullrey

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

Euell, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

504E—Bullrey-Hungryhill-Larkspur complex, 8 to 30 percent slopes, very stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,380 to 7,510

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Bullrey, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform: Backslope on mountains

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart,
volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A1—0 to 7 inches; gravelly loam

A2—7 to 15 inches; very gravelly loam

Bw—15 to 24 inches; very gravelly loam

C—24 to 60 inches; very gravelly sandy loam

Hungryhill, very stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on mountains

Slope: 15 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart,
volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Larkspur, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Lithic Cryorthents

Landform:

- summit on mountains
- shoulder on mountains

Slope: 15 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 3 to 10 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.6 inches

Typical profile:

- A—0 to 4 inches; very cobbly coarse sandy loam
- C—4 to 9 inches; very cobbly coarse sandy loam
- R—9 to 60 inches; bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Bullrey, very stony

- Low bearing strength

Hungryhill, very stony

- Low bearing strength
- Surface compaction hazard

Larkspur, very stony

- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

508F—Eastridge-Judco complex, 20 to 60 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,590 to 6,890

Mean annual precipitation: 15 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Eastridge and similar soils

Composition: 70 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Side slope on north-tending slopes on mountains

Slope: 20 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly ashy loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Volcanic ash influenced alluvium and/or colluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.3 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
E1—2 to 7 inches; gravelly ashy loam
E2—7 to 11 inches; very gravelly ashy sandy loam
E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam
Bt—15 to 31 inches; very gravelly ashy sandy clay loam
BC—31 to 60 inches; very gravelly ashy sandy loam

Judco and similar soils

Composition: 15 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts
Landform: Side slope on north-tending slopes on mountains
Slope: 45 to 60 percent, west to southeast aspects
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Gravelly ashy loam
Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches
Drainage class: Well drained
Parent material: Colluvium and/or residuum over rhyolite and/or welded tuff
Flooding: None
Available water capacity to 60-inch depth: Approximately 3.9 inches
Typical profile:
Oi—0 to 2 inches; slightly decomposed plant material
A—2 to 10 inches; gravelly ashy loam
Bw—10 to 18 inches; very gravelly ashy sandy clay loam
BC—18 to 52 inches; very gravelly ashy sandy loam
Cr—52 to 60 inches; bedrock

Additional Components

Vitroff and similar soils: 9 percent
Coslaw, very stony and similar soils: 5 percent
Rock outcrop: 1 percent

Management Considerations

Eastridge

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Judco

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Coslaw, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

510F—Euell, very stony-Hungryhill, very stony-Rock outcrop complex, 30 to 60 percent slopes

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,150 to 6,890

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Euell, very stony, moderately deep and similar soils

Composition: 40 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Backslope on north-tending mountain slopes

Slope: 30 to 60 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very cobbly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 67 inches

Drainage class: Well drained

Parent material: Residuum over welded tuff

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 9 inches; very cobbly ashy loam

Bt—9 to 19 inches; very gravelly ashy sandy clay loam

BC—19 to 38 inches; very cobbly ashy loam

Cr—38 to 45 inches; bedrock

R—45 to 60 inches; bedrock

Hungryhill, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

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Landform: Backslope on north-tending mountain slopes

Slope: 30 to 60 percent, west to east aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; very gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Illiano, rubbly and similar soils

Composition: 15 percent

Taxonomic class: Ashy-skeletal, glassy Lithic Eutrocryepts

Landform: Shoulder on north-tending mountain slopes

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very flaggy sandy loam

Rock fragments on the soil surface: 15 to 40 percent stones, 2 to 13 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum over welded tuff and/or rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very flaggy sandy loam

Bw—6 to 17 inches; very cobbly sandy loam

R—17 to 60 inches; bedrock

Rock outcrop

Composition: 15 percent

Landform: None assigned

Additional Components

Rubble land: 5 percent

Management Considerations

Euell, very stony, moderately deep

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hungryhill, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Illiano, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

515F—Eastridge-Hungryhill-Poin complex, 20 to 50 percent slopes, very stony

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,300 to 7,120

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Eastridge, very stony and similar soils

Composition: 65 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/bluebunch wheatgrass

Surface layer texture: Very cobbly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; very cobbly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Hungryhill, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; very gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Poin, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform: Shoulder on south-tending mountain slopes

Slope: 20 to 45 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 5 inches; very cobbly sandy loam

Bw—5 to 13 inches; very cobbly sandy loam

C—13 to 15 inches; very cobbly coarse sandy loam

R—15 to 60 inches; bedrock

Additional Components

Eastridge, very stony, moist and similar soils: 4 percent

Rock outcrop: 1 percent

Management Considerations

Eastridge, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hungryhill, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Eastridge, very stony, moist

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

516F—Eastridge-Germangulch complex, 25 to 60 percent slopes, very stony

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,150 to 6,860

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Eastridge, very stony and similar soils

Composition: 45 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on north-tending hills

Slope: 25 to 60 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 5.00 percent boulders, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy sandy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Germangulch, very stony and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Backslope on north-tending hills

Slope: 25 to 60 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 5.00 percent boulders, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; gravelly ashy sandy loam

Bt—10 to 24 inches; cobbly loam

BC—24 to 31 inches; very gravelly sandy loam

Cr—31 to 60 inches; bedrock

Additional Components

Coslaw, very stony and similar soils: 10 percent

Larkspur, very stony and similar soils: 6 percent

Rock outcrop: 4 percent

Management Considerations

Eastridge, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Germangulch, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Coslaw, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Larkspur, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

518F—Germangulch-Eastridge-Euell complex, 25 to 60 percent slopes, very stony

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,130 to 6,920

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Germangulch, very stony and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Backslope on north-tending mountain slopes

Slope: 30 to 60 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, rhyolite

Depth to restrictive feature: Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; gravelly ashy sandy loam

Bt—10 to 24 inches; cobbly loam

BC—24 to 31 inches; very gravelly sandy loam

Cr—31 to 60 inches; bedrock

Eastridge, very stony and similar soils

Composition: 30 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on north-tending mountain slopes

Slope: 25 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, rhyolite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

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Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Euell, very stony and similar soils

Composition: 15 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Backslope on north-tending mountain slopes

Slope: 25 to 50 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, rhyolite

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly ashy sandy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Additional Components

Poin, very stony and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Germangulch, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Eastridge, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Euell, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

522D—Foolhen-Silas-Vitroff complex, 2 to 15 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,590 to 6,890

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Foolhen and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls

Landform: Lower edges of drainageways

Slope: 2 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Mixed alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 8.8 inches

Typical profile:

Oe—0 to 4 inches; mucky peat

A—4 to 16 inches; loam

Bw—16 to 40 inches; sandy clay loam

Cg—40 to 72 inches; gravelly coarse sandy loam

Silas and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Landform: Higher edges of drainageways

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Mixed alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 11.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A1—2 to 18 inches; loam

A2—18 to 38 inches; loam

C—38 to 72 inches; loam

Vitroff and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Foothlope on mountain slopes

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tuffaceous colluvium and/or slope alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; ashy loam

E2—7 to 13 inches; gravelly ashy sandy loam

Bt and E—13 to 21 inches; gravelly ashy sandy clay loam

Bt—21 to 33 inches; gravelly ashy sandy clay loam

BC—33 to 60 inches; very gravelly ashy sandy loam

Additional Components

Mooseflat and similar soils: 10 percent

Management Considerations

Foolhen

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Silas

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Mooseflat

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

523E—Nissler-Euell complex, 12 to 30 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 7,270

Mean annual precipitation: 16 to 20 inches

Frost-free period: 50 to 70 days

Component Description

Nissler and similar soils

Composition: 55 percent

Taxonomic class: Ashy, glassy Vitrandic Argicryolls

Landform: Mountainflank on south-tending mountain slopes

Slope: 12 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: Lithic bedrock: 60 to 79 inches

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

A—0 to 8 inches; gravelly ashy loam

Bt—8 to 22 inches; ashy sandy clay loam

BC—22 to 60 inches; gravelly ashy sandy loam

R—60 to 79 inches; bedrock

Euell and similar soils

Composition: 35 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Mountainflank on south-tending mountain slopes

Slope: 12 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly ashy sandy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Additional Components

Bullrey and similar soils: 10 percent

Management Considerations

Nissler

- Low bearing strength
- Surface compaction hazard

Euell

- Low bearing strength
- Surface compaction hazard

Bullrey

- Low bearing strength

525G—Eastridge gravelly ashy loam, 45 to 75 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,640 to 6,740

Mean annual precipitation: 15 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Eastridge and similar soils

Composition: 85 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on north-tending mountain slopes

Slope: 45 to 75 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Additional Components

Illiano and similar soils: 13 percent

Rock outcrop: 2 percent

Management Considerations

Eastridge

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Illiano

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

532E—Hungryhill-Poin-Larkspur complex, 15 to 45 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,250 to 6,770

Mean annual precipitation: 14 to 18 inches

Frost-free period: 50 to 70 days

Component Description

Hungryhill, stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on south-tending hills

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Poin, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform: Backslope on south-tending hills

Slope: 15 to 45 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Soil Survey of Deerlodge National Forest Area, Montana

Typical profile:

- A—0 to 5 inches; very gravelly sandy loam
- Bw—5 to 13 inches; very cobbly sandy loam
- C—13 to 15 inches; very cobbly coarse sandy loam
- R—15 to 60 inches; bedrock

Larkspur, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Lithic Cryorthents

Landform:

- shoulder on south-tending hills
- summit on south-tending hills
- south-tending ridges

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely gravelly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders, 40 to 100 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 3 to 10 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.6 inches

Typical profile:

- A—0 to 4 inches; extremely gravelly coarse sandy loam
- C—4 to 9 inches; very cobbly coarse sandy loam
- R—9 to 60 inches; bedrock

Additional Components

Bridger and similar soils: 12 percent

Rock outcrop: 8 percent

Management Considerations

Hungryhill, stony

- Low bearing strength
- Surface compaction hazard

Poin, stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Larkspur, stony

- Surface rock fragments
- Shallow soil
- Low bearing strength

Bridger

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

540D—Evaro-Germangulch complex, 4 to 25 percent slopes, extremely stony

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,840 to 7,270

Mean annual precipitation: 17 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Evaro, extremely stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain ridges

Slope: 4 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

A—3 to 8 inches; gravelly ashy sandy loam

E—8 to 21 inches; very gravelly sandy loam

E and Bt—21 to 60 inches; very gravelly sandy clay loam

Germangulch, extremely stony and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Mountain ridges

Slope: 4 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones, 3 to 10 feet apart, volcanic, unspecified

Depth to restrictive feature: Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; gravelly ashy sandy loam

Bt—10 to 24 inches; cobbly loam

BC—24 to 31 inches; very gravelly sandy loam

Cr—31 to 60 inches; bedrock

Additional Components

Coslaw, extremely stony and similar soils: 10 percent

Evoro, stony and similar soils: 10 percent

Management Considerations

Evoro, extremely stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Germangulch, extremely stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Coslaw, extremely stony

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Evoro, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

541F—Hungryhill-Euell complex, 20 to 50 percent slopes, very stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 7,460

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Hungryhill, very stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart,
volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Euell, very stony and similar soils

Composition: 35 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly ashy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly ashy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Additional Components

Poin, very stony and similar soils: 10 percent

Management Considerations

Hungryhill, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Euell, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

542D—Euell-Hungryhill-Bullrey complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,170 to 7,250

Mean annual precipitation: 17 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Euell and similar soils

Composition: 40 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Broad mountaintop ridges

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Ashy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; ashy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Hungryhill and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Broad mountaintop ridges

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A1—0 to 4 inches; gravelly loam

A2—4 to 11 inches; gravelly loam

Bt—11 to 20 inches; very gravelly sandy clay loam

BC—20 to 31 inches; very gravelly sandy loam

R—31 to 60 inches; bedrock

Bullrey and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- broad mountaintop ridges
- saddles

Slope: 4 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from rhyolite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A1—0 to 7 inches; gravelly loam

A2—7 to 15 inches; very gravelly loam

Bw—15 to 24 inches; very gravelly loam

C—24 to 60 inches; very gravelly sandy loam

Additional Components

Larkspur and similar soils: 5 percent

Management Considerations

Euell

- Low bearing strength
- Surface compaction hazard

Hungryhill

- Low bearing strength
- Surface compaction hazard

Bullrey

- Low bearing strength

Larkspur

- Shallow soil
- Low bearing strength

542E—Braziel-Shanley complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt1—8 to 17 inches; very gravelly loam

Bt2—17 to 43 inches; very gravelly clay loam

BC—43 to 60 inches; extremely gravelly loam

Shanley and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 6 inches; gravelly loam

Bt1—6 to 15 inches; very gravelly clay loam

Bt2—15 to 60 inches; very gravelly clay loam

Additional Components

Perma and similar soils: 5 percent

Rock outcrop: 5 percent

Straw and similar soils: 5 percent

Management Considerations

Braziel

- Low bearing strength
- Surface compaction hazard

Shanley

- Low bearing strength
- Surface compaction hazard

Perma

- Low bearing strength

Rock outcrop

- Nonsoil material

Straw

- Low bearing strength
- Surface compaction hazard

542Ep—Perma very bouldery loam, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Perma and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very bouldery loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Outwash

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

A—0 to 8 inches; very bouldery loam

Bw—8 to 32 inches; very cobbly sandy loam

BC—32 to 60 inches; extremely cobbly sandy loam

Additional Components

Perma, greater slopes and similar soils: 6 percent

Shawmut and similar soils: 6 percent

Water: 3 percent

Management Considerations

Perma

- Surface boulders
- Low bearing strength
- Surface compaction hazard

Perma, greater slopes

- Steep slopes
- Erodible surface
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Shawmut

- Surface boulders
- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

542F—Braziel-Shanley complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Braziel and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Shanley and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

- A—0 to 6 inches; gravelly loam
- Bt1—6 to 15 inches; very gravelly clay loam
- Bt2—15 to 60 inches; very gravelly clay loam

Additional Components

Perma and similar soils: 5 percent

Rock outcrop: 5 percent

Straw and similar soils: 5 percent

Management Considerations

Braziel

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Shanley

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Perma

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

Straw

- Low bearing strength
- Surface compaction hazard

543E—Tolbert-Braziel complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Tolbert and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- A—0 to 5 inches; gravelly loam
- Bt—5 to 12 inches; very gravelly clay loam
- R—12 to 60 inches; unweathered bedrock

Braziel and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt1—8 to 17 inches; very gravelly loam
- Bt2—17 to 43 inches; very gravelly clay loam
- BC—43 to 60 inches; extremely gravelly loam

Additional Components

Rock outcrop: 5 percent

Shanley and similar soils: 5 percent

Whitlash and similar soils: 5 percent

Management Considerations

Tolbert

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Braziel

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Shanley

- Low bearing strength
- Surface compaction hazard

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

543F—Evaro-Vitroff-Germangulch, very stony, complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,510 to 6,870

Mean annual precipitation: 17 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Evoro and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Backslope on north-tending mountain slopes

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

A—3 to 8 inches; gravelly ashy sandy loam

E—8 to 21 inches; very gravelly sandy loam

E and Bt—21 to 60 inches; very gravelly sandy clay loam

Vitroff and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- footslope on north-tending mountain slopes
- backslope on north-tending mountain slopes

Slope: 20 to 35 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tuffaceous colluvium and/or slope alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy sandy loam

E2—7 to 13 inches; gravelly ashy sandy loam

Bt and E—13 to 21 inches; gravelly ashy sandy clay loam

Bt—21 to 33 inches; gravelly ashy sandy clay loam

BC—33 to 60 inches; very gravelly ashy sandy loam

Germangulch, very stony and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Backslope on north-tending mountain slopes

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Paralithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Loamy colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 10 inches; gravelly ashy sandy loam

Bt—10 to 24 inches; cobbly loam

BC—24 to 31 inches; very gravelly sandy loam

Cr—31 to 60 inches; bedrock

Additional Components

Coslaw, extremely stony and similar soils: 10 percent

Rock outcrop: 10 percent

Management Considerations

Evaro

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Germangulch, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Coslaw, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

545G—Illiano, very stony-Rock outcrop-Rubble land complex, 45 to 75 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,220 to 7,430

Mean annual precipitation: 14 to 18 inches

Frost-free period: 30 to 50 days

Component Description

Illiano, very stony and similar soils

Composition: 40 percent

Taxonomic class: Ashy-skeletal, glassy Lithic Eutrocryepts

Landform: Backslope on mountains

Slope: 45 to 75 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very channery sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 10 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum over rhyolite and/or welded tuff

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very channery sandy loam

Bw—6 to 17 inches; very cobbly sandy loam

R—17 to 60 inches; bedrock

Rock outcrop

Composition: 30 percent

Landform: None assigned

Rubble land

Composition: 15 percent

Landform: None assigned

Additional Components

Eastridge, very stony and similar soils: 10 percent

Judco, stony and similar soils: 5 percent

Management Considerations

Illiano, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

Eastridge, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Judco, stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

548F—Evaro-Eastridge-Vitroff complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,270 to 7,270

Mean annual precipitation: 15 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Evaro and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Landform: Backslope on north-tending mountain slopes

Slope: 25 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

A—3 to 8 inches; gravelly ashy loam

E—8 to 21 inches; very gravelly sandy loam

E and Bt—21 to 60 inches; very gravelly sandy clay loam

Eastridge and similar soils

Composition: 20 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on north-tending mountain slopes

Slope: 20 to 45 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; gravelly ashy loam
- E2—7 to 11 inches; very gravelly ashy sandy loam
- E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam
- Bt—15 to 31 inches; very gravelly ashy sandy clay loam
- BC—31 to 60 inches; very gravelly ashy sandy loam

Vitroff and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Footslope on north-tending mountain slopes

Slope: 20 to 35 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/twinflower

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tuffaceous colluvium and/or slope alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; ashy loam
- E2—7 to 13 inches; gravelly ashy sandy loam
- Bt and E—13 to 21 inches; gravelly ashy sandy clay loam
- Bt—21 to 33 inches; gravelly ashy sandy clay loam
- BC—33 to 60 inches; very gravelly ashy sandy loam

Additional Components

Coslaw and similar soils: 9 percent

Rock outcrop: 1 percent

Management Considerations

Evano

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Eastridge

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Coslaw

- Steep slopes
- Erodible surface

- Shallow soil
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

550E—Evaro-Vitroff complex, 8 to 30 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,760 to 7,170

Mean annual precipitation: 18 to 22 inches

Frost-free period: 30 to 50 days

Component Description

Evaro and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform:

- toeslope on north-tending mountain slopes
- footslope on north-tending mountain slopes

Slope: 8 to 30 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/twinflower

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- Oe—1 to 3 inches; moderately decomposed plant material
- A—3 to 8 inches; gravelly ashy loam
- E—8 to 21 inches; very gravelly sandy loam
- E and Bt—21 to 60 inches; very gravelly sandy clay loam

Vitroff and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- footslope on north-tending mountain slopes
- toeslope on north-tending mountain slopes

Slope: 8 to 30 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/twinflower

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tuffaceous colluvium and/or slope alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; ashy loam
- E2—7 to 13 inches; gravelly ashy sandy loam
- Bt and E—13 to 21 inches; gravelly ashy sandy clay loam
- Bt—21 to 33 inches; gravelly ashy sandy clay loam
- BC—33 to 60 inches; very gravelly ashy sandy loam

Additional Components

Euell and similar soils: 8 percent

Judco, stony and similar soils: 7 percent

Savenac and similar soils: 5 percent

Management Considerations

Evoro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Euell

- Low bearing strength
- Surface compaction hazard

Judco, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Savenac

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

551F—Shawmut extremely bouldery loam, 8 to 50 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,800

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Shawmut and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Moraines

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 8 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely bouldery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

A—0 to 6 inches; extremely bouldery loam

Bt—6 to 18 inches; very bouldery loam

Bk1—18 to 40 inches; very bouldery loam

Bk2—40 to 60 inches; extremely bouldery sandy loam

Additional Components

Quigley and similar soils: 5 percent

Staad and similar soils: 5 percent

Poronto and similar soils: 3 percent

Water: 2 percent

Management Considerations

Shawmut

- Steep slopes
- Erodible surface
- Surface boulders
- Low bearing strength
- Surface compaction hazard

Quigley

- Low bearing strength
- Surface compaction hazard

Staad

- Low bearing strength
- Surface compaction hazard

Poronto

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Water

- Nonsoil material

552D—Clasoil-Crackerville complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,500 to 5,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Clasoil and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform: Mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.6 inches

Typical profile:

A—0 to 11 inches; sandy loam

Bt—11 to 31 inches; gravelly sandy clay loam

BC—31 to 60 inches; gravelly coarse sandy loam

Crackerville and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Mountains

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches

- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.7 inches

Typical profile:

A—0 to 8 inches; loam

Bt—8 to 23 inches; very gravelly sandy clay loam

Cr—23 to 32 inches; weathered bedrock

R—32 to 60 inches; unweathered bedrock

Additional Components

Perma, stony and similar soils: 5 percent

Rock outcrop: 5 percent

Tolbert and similar soils: 5 percent

Management Considerations

Clasoil

- Low bearing strength
- Surface compaction hazard

Crackerville

- Low bearing strength
- Surface compaction hazard

Perma, stony

- Low bearing strength

Rock outcrop

- Nonsoil material

Tolbert

- Shallow soil
- Low bearing strength
- Surface compaction hazard

552E—Clasoil-Crackerville complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,500 to 5,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Clasoil and similar soils

Composition: 50 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.6 inches

Typical profile:

- A—0 to 11 inches; sandy loam
- Bt—11 to 31 inches; gravelly sandy clay loam
- BC—31 to 60 inches; gravelly coarse sandy loam

Crackerville and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.7 inches

Typical profile:

- A—0 to 8 inches; loam
- Bt—8 to 23 inches; very gravelly sandy clay loam
- Cr—23 to 32 inches; weathered bedrock
- R—32 to 60 inches; unweathered bedrock

Additional Components

- Perma, stony and similar soils: 5 percent
- Rock outcrop: 5 percent
- Tolbert and similar soils: 5 percent

Management Considerations

Clasoil

- Low bearing strength
- Surface compaction hazard

Crackerville

- Low bearing strength
- Surface compaction hazard

Perma, stony

- Low bearing strength

Rock outcrop

- Nonsoil material

Tolbert

- Shallow soil
- Low bearing strength
- Surface compaction hazard

552F—Brickner, very bouldery-Rock outcrop-Tolbert, very bouldery, association, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Brickner, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs

Landform:

- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 3 inches; gravelly loam

Bt—3 to 8 inches; very gravelly sandy clay loam

BC—8 to 12 inches; extremely gravelly coarse sandy loam

R—12 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 30 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Tolbert, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- interfluves
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone and/or basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bt—7 to 12 inches; very cobbly clay loam

R—12 to 60 inches; unweathered bedrock

Additional Components

Mocmont, stony and similar soils: 6 percent

Blaincreek and similar soils: 5 percent

Shawmut, stony and similar soils: 4 percent

Management Considerations

Brickner, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Tolbert, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Mocmont, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Blaincreek

- Low bearing strength
- Surface compaction hazard

Shawmut, stony

- Low bearing strength
- Surface compaction hazard

559E—Eastridge-Euell, cool, complex, 8 to 30 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,200 to 6,840

Mean annual precipitation: 15 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Eastridge and similar soils

Composition: 70 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Foothlope on mountains

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Euell, cool and similar soils

Composition: 20 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Foothlope on mountains
Slope: 15 to 30 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass
Surface layer texture: Gravelly ashy sandy loam
Depth to restrictive feature: Lithic bedrock: 40 to 60 inches
Drainage class: Well drained
Parent material: Loamy skeletal colluvium over volcanic rock
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.1 inches
Typical profile:
A—0 to 10 inches; gravelly ashy sandy loam
Bt—10 to 26 inches; very gravelly ashy sandy clay loam
BC—26 to 58 inches; very gravelly ashy sandy loam
R—58 to 60 inches; bedrock

Additional Components

Savenac and similar soils: 10 percent

Management Considerations

Eastridge

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Euell, cool

- Low bearing strength
- Surface compaction hazard

Savenac

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

561F—Euell-Bigbutte complex, 20 to 50 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,690 to 7,120

Mean annual precipitation: 16 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Euell, stony and similar soils

Composition: 55 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly ashy sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 33 to 100 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; cobbly ashy sandy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Bigbutte, stony and similar soils

Composition: 20 percent

Taxonomic class: Ashy, glassy Vitrandic Haplocryolls

Landform: Backslope on south-tending mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Ashy sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 33 to 100 feet apart, volcanic, unspecified

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 28 to 60 inches

Drainage class: Well drained

Parent material: Volcanic ash influenced colluvium over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

A—0 to 8 inches; ashy sandy loam

Bw—8 to 17 inches; gravelly ashy sandy loam

BC—17 to 30 inches; gravelly ashy sandy loam

Cr—30 to 36 inches; bedrock

R—36 to 60 inches; bedrock

Additional Components

Eastridge, stony and similar soils: 10 percent

Rock outcrop: 6 percent

Poin, very stony and similar soils: 5 percent

Larkspur, very stony and similar soils: 4 percent

Management Considerations

Euell, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bigbutte, stony

- Steep slopes
- Erodible surface

Eastridge, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Larkspur, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

562G—Poin, very stony-Rubble land-Eastridge, very stony complex, 25 to 70 percent slopes

Interpretive focus: Rangeland and forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,120 to 6,690

Mean annual precipitation: 16 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Poin, very stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform: Backslope on south-tending mountain slopes

Slope: 35 to 70 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 5 inches; very gravelly sandy loam

Bw—5 to 13 inches; very cobbly sandy loam

C—13 to 15 inches; very cobbly coarse sandy loam

R—15 to 60 inches; bedrock

Rubble land

Composition: 25 percent

Landform: None assigned

Eastridge, very stony and similar soils

Composition: 20 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform:

- backslope on south-tending mountain slopes
- south-tending swales

Slope: 25 to 50 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly ashy sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; very gravelly ashy sandy loam
- E2—7 to 11 inches; very gravelly ashy sandy loam
- E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam
- Bt—15 to 31 inches; very gravelly ashy sandy clay loam
- BC—31 to 60 inches; very gravelly ashy sandy loam

Larkspur, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid Lithic Cryorthents

Landform:

- shoulder on south-tending mountain slopes
- backslope on south-tending mountain slopes

Slope: 35 to 70 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: Lithic bedrock: 3 to 10 inches

Drainage class: Well drained

Parent material: Colluvium and/or residuum over volcanic and sedimentary rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.6 inches

Typical profile:

- A—0 to 4 inches; very gravelly sandy loam
- C—4 to 9 inches; very cobbly coarse sandy loam
- R—9 to 60 inches; bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Poin, very stony

- Steep slopes
- Erodible surface

- Shallow soil
 - Low bearing strength
- Rubble land
- Nonsoil material
- Eastridge, very stony
- Steep slopes
 - Erodible surface
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Larkspur, very stony
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
- Rock outcrop
- Nonsoil material

567F—Evaro-Eastridge complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,230 to 7,480

Mean annual precipitation: 17 to 21 inches

Frost-free period: 30 to 50 days

Component Description

Evaro and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Backslope on north-tending mountain slopes

Slope: 25 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

A—3 to 8 inches; gravelly ashy loam

E—8 to 21 inches; very gravelly sandy loam

E and Bt—21 to 60 inches; very gravelly sandy clay loam

Eastridge and similar soils

Composition: 25 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- footslope on north-tending mountain slopes
- backslope on north-tending mountain slopes

Slope: 20 to 45 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; gravelly ashy loam
- E2—7 to 11 inches; very gravelly ashy sandy loam
- E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam
- Bt—15 to 31 inches; very gravelly ashy sandy clay loam
- BC—31 to 60 inches; very gravelly ashy sandy loam

Additional Components

Judco and similar soils: 12 percent

Savenac and similar soils: 6 percent

Rock outcrop: 2 percent

Management Considerations

Evapo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Eastridge

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Judco

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Savenac

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

570E—Eastridge-Euell complex, 15 to 40 percent slopes

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,180 to 7,100

Mean annual precipitation: 16 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Eastridge and similar soils

Composition: 40 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Glossocryalfs

Landform: Backslope on south-tending mountain slopes

Slope: 15 to 40 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash influenced alluvium and/or colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly ashy loam

E2—7 to 11 inches; very gravelly ashy sandy loam

E/Bt—11 to 15 inches; very cobbly ashy sandy clay loam

Bt—15 to 31 inches; very gravelly ashy sandy clay loam

BC—31 to 60 inches; very gravelly ashy sandy loam

Euell and similar soils

Composition: 30 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Backslope on south-tending mountain slopes

Slope: 15 to 40 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly ashy sandy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Additional Components

Bullrey and similar soils: 10 percent

Illiano, very stony and similar soils: 10 percent

Hungryhill, stony and similar soils: 7 percent

Rock outcrop: 3 percent

Management Considerations

Eastridge

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Euell

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bullrey

- Low bearing strength

Illiano, very stony

- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Hungryhill, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

580D—Comad-Elkner complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Comad and similar soils

Composition: 65 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 15 inches; very stony sandy loam

E and Bt1—15 to 25 inches; very stony sandy loam

E and Bt2—25 to 35 inches; very stony loamy sand

BC—35 to 60 inches; very stony loamy sand

Elkner and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E1—3 to 11 inches; stony sandy loam

E2—11 to 18 inches; sandy loam

E and Bt—18 to 41 inches; coarse sandy loam

BC—41 to 60 inches; gravelly coarse sandy loam

Additional Components

Crackerville and similar soils: 5 percent

Rock outcrop: 5 percent

Typic Eutrocryepts and similar soils: 5 percent

Management Considerations

Comad

- None

Elkner

- None

Crackerville

- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Typic Eutrocryepts

- None

580E—Comad-Elkner complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Comad and similar soils

Composition: 65 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 15 inches; very stony sandy loam

E and Bt1—15 to 25 inches; very stony sandy loam

E and Bt2—25 to 35 inches; very stony loamy sand

BC—35 to 60 inches; very stony loamy sand

Elkner and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E1—3 to 11 inches; stony sandy loam

E2—11 to 18 inches; sandy loam
E and Bt—18 to 41 inches; coarse sandy loam
BC—41 to 60 inches; gravelly coarse sandy loam

Additional Components

Crackerville and similar soils: 5 percent
Rock outcrop: 5 percent
Typic Eutrocryepts and similar soils: 5 percent

Management Considerations

Comad

- Cutslope slumping
- Cutslope erosion

Elkner

- None

Crackerville

- Surface boulders
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Typic Eutrocryepts

- None

580F—Comad-Elkner complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Comad and similar soils

Composition: 65 percent

Taxonomic class: Sandy-skeletal, mixed Lamellic Cryorthents

Landform: Mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Very stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Excessively drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 15 inches; very stony sandy loam
- E and Bt1—15 to 25 inches; very stony sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

E and Bt2—25 to 35 inches; very stony loamy sand

BC—35 to 60 inches; very stony loamy sand

Elkner and similar soils

Composition: 20 percent

Taxonomic class: Coarse-loamy, mixed, superactive Lamellic Eutrocryepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/blue huckleberry
- Douglas-fir/twinflower

Surface layer texture: Stony sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E1—3 to 11 inches; stony sandy loam

E2—11 to 18 inches; sandy loam

E and Bt—18 to 41 inches; coarse sandy loam

BC—41 to 60 inches; gravelly coarse sandy loam

Additional Components

Crackerville and similar soils: 5 percent

Rock outcrop: 5 percent

Typic Eutrocryepts and similar soils: 5 percent

Management Considerations

Comad

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

Elkner

- Steep slopes
- Erodible surface

Crackerville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Typic Eutrocryepts

- Steep slopes
- Erodible surface

584F—Whitecow-Whitecow, stony-Warneke complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Whitecow and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 5 inches; channery loam

Bk1—5 to 13 inches; very channery loam

Bk2—13 to 50 inches; very channery loam

Bk3—50 to 60 inches; extremely channery loam

Whitecow, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/common juniper

Surface layer texture: Very gravelly loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; very gravelly loam

Bk1—7 to 15 inches; very gravelly loam

Bk2—15 to 51 inches; very channery loam

Bk3—51 to 60 inches; extremely gravelly loam

Warneke and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Calcustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone over residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.8 inches

Typical profile:

A—0 to 3 inches; very gravelly loam

Bk—3 to 12 inches; extremely gravelly loam

R—12 to 60 inches; unweathered bedrock

Additional Components

Whitecow, gravelly loam, stony and similar soils: 6 percent

Windham, very stony and similar soils: 5 percent

Rock outcrop, limestone: 4 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitecow, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Warneke

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitecow, gravelly loam, stony

- Low bearing strength
- Surface compaction hazard

Windham, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, limestone

- Nonsoil material

585E—Whitecow, bouldery-Shawmut, very bouldery-Rock outcrop complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Whitecow, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/Idaho fescue
- Douglas-fir/common juniper

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.0 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; very channery loam

Bk1—7 to 15 inches; very channery loam

Bk2—15 to 51 inches; very channery loam

Bk3—51 to 60 inches; extremely channery loam

Shawmut, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bt—7 to 19 inches; very cobbly sandy clay loam

Bk1—19 to 32 inches; very cobbly sandy clay loam

Bk2—32 to 60 inches; very cobbly sandy loam

Rock outcrop, limestone

Composition: 15 percent

Definition: Rock outcrop consists mainly of areas of exposed hard limestone bedrock.

Limestone cobbles and stones litter the area and accumulate at the base of hills and escarpments.

Landform: None assigned

Additional Components

Warneke and similar soils: 6 percent

Whitecow, very gravelly loam, stony and similar soils: 5 percent

Windham and similar soils: 4 percent

Management Considerations

Whitecow, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Shawmut, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, limestone

- Nonsoil material

Warneke

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitecow, very gravelly loam, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Windham

- Low bearing strength
- Surface compaction hazard

595D—Mooseflat, very stony-Pappascreek, very stony-Euell complex, 2 to 15 percent slopes

Interpretive focus: Riparian and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,100 to 6,690

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Mooseflat, very stony and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Landform: Drainageways

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Mixed alluvium over alluvium derived from volcanic rock

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.7 inches

Typical profile:

Oe—0 to 5 inches; mucky peat

A—5 to 14 inches; loam

Bg—14 to 28 inches; sandy clay loam

2Cg—28 to 72 inches; very gravelly coarse sand

Pappascreek, very stony and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive Aquic Cumulic Haplocryolls

Landform: Toeslope on hills

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, volcanic, unspecified

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Mixed alluvium over alluvium derived from volcanic rock

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 8.1 inches

Typical profile:

Oe—0 to 3 inches; mucky peat

A—3 to 25 inches; loam

C—25 to 54 inches; stratified silt loam to loam to coarse sandy loam

2C—54 to 72 inches; gravelly coarse sand

Euell and similar soils

Composition: 25 percent

Taxonomic class: Ashy-skeletal, glassy Vitrandic Argicryolls

Landform: Footslope on hills

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly ashy sandy loam

Depth to restrictive feature: Lithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Loamy skeletal colluvium over volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

A—0 to 10 inches; gravelly ashy sandy loam

Bt—10 to 26 inches; very gravelly ashy sandy clay loam

BC—26 to 58 inches; very gravelly ashy sandy loam

R—58 to 60 inches; bedrock

Additional Components

Hungryhill and similar soils: 5 percent

Management Considerations

Mooseflat, very stony

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Pappascreek, very stony

- High water table
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Euell

- Low bearing strength
- Surface compaction hazard

Hungryhill

- Low bearing strength
- Surface compaction hazard

596D—Worock-Loberg complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; gravelly loam
- E/Bt—6 to 17 inches; gravelly loam
- Bt—17 to 34 inches; very gravelly clay loam
- C—34 to 60 inches; very gravelly sandy clay loam

Loberg and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 10 inches; clay loam

Bt/E—10 to 18 inches; very gravelly clay loam

Bt1—18 to 32 inches; very gravelly clay

Bt2—32 to 48 inches; very gravelly clay

Bt3—48 to 60 inches; very cobbly clay loam

Additional Components

Danaher and similar soils: 5 percent

Elve and similar soils: 5 percent

Foolhen and similar soils: 5 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

596E—Worock-Loberg complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Soil Survey of Deerlodge National Forest Area, Montana

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 6 inches; gravelly loam
- E/Bt—6 to 17 inches; gravelly loam
- Bt—17 to 34 inches; very gravelly clay loam
- C—34 to 60 inches; very gravelly sandy clay loam

Loberg and similar soils

Composition: 35 percent

Taxonomic class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass

Surface layer texture: Clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 10 inches; clay loam
- Bt/E—10 to 18 inches; very gravelly clay loam
- Bt1—18 to 32 inches; very gravelly clay
- Bt2—32 to 48 inches; very gravelly clay
- Bt3—48 to 60 inches; very cobbly clay loam

Additional Components

Danaher and similar soils: 4 percent

Elve and similar soils: 4 percent

Foolhen and similar soils: 4 percent

Rock outcrop: 3 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Danaher

- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Foolhen

- High water table
- High windthrow hazard

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

597C—Kilgore-Foolhen-Philipsburg complex, 2 to 12 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,350 to 7,050

Mean annual precipitation: 15 to 19 inches

Frost-free period: 30 to 50 days

Component Description

Kilgore and similar soils

Composition: 45 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive

Cumulic Cryaquolls

Landform: Drainageways

Slope: 2 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Silt loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 7.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 19 inches; silt loam

Ag—19 to 29 inches; loam

2Cg—29 to 38 inches; gravelly sandy loam

2C—38 to 60 inches; very gravelly coarse sand

Foolhen and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls

Landform: Drainageways

Slope: 2 to 6 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 10.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 13 inches; loam
- Bw—13 to 26 inches; loam
- C1—26 to 39 inches; sandy clay loam
- C2—39 to 60 inches; sandy clay loam

Philipsburg, wet and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Calcic Argicryolls

Landform: Toeslope on hills

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Moderately well drained

Parent material: Alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 9.3 inches

Typical profile:

- A—0 to 9 inches; loam
- Bt—9 to 22 inches; clay loam
- Bk—22 to 40 inches; gravelly loam
- BC—40 to 44 inches; gravelly loam
- C—44 to 60 inches; gravelly loam

Additional Components

Euell, stony and similar soils: 5 percent

Management Considerations

Kilgore

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Foolhen

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Philipsburg, wet

- Low bearing strength
- Surface compaction hazard

Euell, stony

- Low bearing strength
- Surface compaction hazard

597E—Evaro gravelly ashy loam, cold, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,700 to 8,500

Mean annual precipitation: 20 to 40 inches

Frost-free period: 20 to 70 days

Component Description

Evaro and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and silty volcanic ash over gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 8 inches; gravelly ashy loam

2E and Bt1—8 to 42 inches; very gravelly loam

2E and Bt2—42 to 60 inches; extremely gravelly sandy loam

Additional Components

Elve and similar soils: 5 percent

Phillcher and similar soils: 5 percent

Rock outcrop: 5 percent

Management Considerations

Evaro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Phillcher

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

599E—Silverchief-Trapps complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Silverchief and similar soils

Composition: 45 percent

Taxonomic class: Fine, mixed, superactive, frigid Calcic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 5 inches; loam
- Bt1—5 to 22 inches; clay loam
- Bt2—22 to 40 inches; gravelly clay
- Bk—40 to 60 inches; gravelly clay loam

Trapps and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

- A—0 to 8 inches; gravelly loam
- Bt—8 to 29 inches; very gravelly clay loam
- Bk1—29 to 42 inches; very gravelly loam
- Bk2—42 to 60 inches; extremely gravelly loam

Additional Components

- Crow and similar soils: 5 percent
- Rock outcrop: 5 percent
- Whitecow and similar soils: 5 percent

Management Considerations

Silverchief

- Low bearing strength
- Surface compaction hazard

Trapps

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Whitecow

- Low bearing strength
- Surface compaction hazard

599F—Silverchief-Trapps complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Silverchief and similar soils

Composition: 45 percent

Taxonomic class: Fine, mixed, superactive, frigid Calcic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 5 inches; loam

Bt1—5 to 22 inches; clay loam

Bt2—22 to 40 inches; gravelly clay

Bk—40 to 60 inches; gravelly clay loam

Trapps and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 8 inches; gravelly loam

Bt—8 to 29 inches; very gravelly clay loam

Bk1—29 to 42 inches; very gravelly loam

Bk2—42 to 60 inches; extremely gravelly loam

Additional Components

Crow and similar soils: 5 percent

Rock outcrop: 5 percent

Whitecow and similar soils: 5 percent

Management Considerations

Silverchief

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Trapps

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

612A—Kilgore-Foxgulch complex, 0 to 4 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,450 to 6,920

Mean annual precipitation: 14 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Kilgore and similar soils

Composition: 70 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive
Cumulic Cryaquolls

Landform: Flood plains

Slope: 0 to 2 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Silty clay loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium

Flooding: Frequent

Water table: Present

Available water capacity to 60-inch depth: Approximately 7.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 19 inches; silty clay loam

Ag—19 to 29 inches; loam

2Cg—29 to 38 inches; gravelly sandy loam

2C—38 to 60 inches; very gravelly coarse sand

Foxgulch and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Fluvaquentic Haplocryolls

Landform: Flood-plain steps

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 12 inches; loam

Bw—12 to 30 inches; loam

BC—30 to 46 inches; sandy clay loam

2C—46 to 60 inches; very gravelly coarse sand

Additional Components

Browns gulch and similar soils: 5 percent

Mooseflat and similar soils: 5 percent

Management Considerations

Kilgore

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Foxgulch

- High water table
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Browns gulch

- Low bearing strength

Mooseflat

- Flooding
- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

616D—Silas-Vitroff complex, 2 to 15 percent slopes

Interpretive focus: Riparian

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,280 to 7,000

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Silas and similar soils

Composition: 65 percent

Taxonomic class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Landform: Side slopes of drainageways

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Moderately well drained

Parent material: Mixed alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 11.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

A1—2 to 18 inches; loam

A2—18 to 38 inches; loam

C—38 to 72 inches; loam

Vitroff and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform: Footslope on mountain slopes

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Ashy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Tuffaceous colluvium and/or slope alluvium derived from volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.8 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; ashy loam

E2—7 to 13 inches; gravelly ashy sandy loam

Bt and E—13 to 21 inches; gravelly ashy sandy clay loam

Bt—21 to 33 inches; gravelly ashy sandy clay loam

BC—33 to 60 inches; very gravelly ashy sandy loam

Additional Components

Foolhen and similar soils: 10 percent

Management Considerations

Silas

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Vitroff

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Foolhen

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

624B—Nirling-Bandy complex, 0 to 4 percent slopes, rarely flooded

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 10 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Nirling and similar soils

Composition: 45 percent

Taxonomic class: Sandy-skeletal, mixed, frigid Oxyaquic Haplustolls

Landform: Tread on flood plains

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

A1—0 to 5 inches; gravelly loam

A2—5 to 9 inches; very gravelly loam

Bw—9 to 13 inches; very gravelly sandy loam

2C—13 to 60 inches; extremely gravelly sand

Bandy and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive,
frigid Typic Endoaquolls

Landform: Flood plains

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Loamy alluvium over sandy and gravelly alluvium

Flooding: Rare

Water table: Present

Available water capacity to 60-inch depth: Approximately 2.9 inches

Typical profile:

A—0 to 7 inches; loam

Bw1—7 to 10 inches; sandy loam

Bw2—10 to 14 inches; sandy loam

2C—14 to 60 inches; very gravelly sand

Additional Components

Blossberg and similar soils: 4 percent
Flintcreek and similar soils: 4 percent
Windlass and similar soils: 4 percent
Poronto and similar soils: 3 percent

Management Considerations

Nirling

- High water table
- Low bearing strength
- Surface compaction hazard

Bandy

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blossberg

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Flintcreek

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Windlass

- High water table
- Low bearing strength
- Surface compaction hazard

Poronto

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

634E—Rencot, very stony-Rock outcrop-Bronec, very stony, complex, 25 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 10 to 14 inches

Frost-free period: 90 to 115 days

Component Description

Rencot, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Calcustepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- escarpments
- hillsides
- strath terraces

Slope: 25 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 4 inches; very cobbly loam
- Bk—4 to 19 inches; very gravelly loam
- R—19 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Bronec, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Aridic Calcustepts

Landform:

- alluvial fans
- escarpments
- hillsides
- valley floors

Slope: 25 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Sandy and gravelly calcareous tertiary valley fill alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- A—0 to 9 inches; very gravelly loam
- Bk—9 to 48 inches; very gravelly loam
- BC—48 to 60 inches; very gravelly loamy sand

Additional Components

Geohrock, stony and similar soils: 6 percent

Bronec, stony and similar soils: 5 percent

Cabbart, very stony and similar soils: 4 percent

Management Considerations

Rencot, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Bronec, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Geohrock, stony

- Low bearing strength
- Surface compaction hazard

Bronec, stony

- Low bearing strength
- Surface compaction hazard

Cabbart, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

635—Tetonview loam, 0 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,800

Mean annual precipitation: 10 to 19 inches

Frost-free period: 70 to 105 days

Component Description

Tetonview and similar soils

Composition: 85 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Aeric Calciaquolls

Landform: Stream terraces

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Poorly drained

Parent material: Alluvium

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 9.2 inches

Typical profile:

A—0 to 9 inches; loam

Bkg—9 to 42 inches; clay loam

2Cg—42 to 60 inches; gravelly sandy clay loam

Additional Components

Blossberg and similar soils: 3 percent
Nythar and similar soils: 3 percent
Poronto and similar soils: 3 percent
Saypo and similar soils: 3 percent
Saypo, saline and similar soils: 3 percent

Management Considerations

Tetonview

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blossberg

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Nythar

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poronto

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Saypo

- High water table
- Low bearing strength
- Surface compaction hazard

Saypo, saline

- High water table
- Low bearing strength
- Surface compaction hazard

676B—Finn loam, 0 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,400 to 7,200

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Finn and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- alluvial fans
- stream terraces

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Very poorly drained
Parent material: Alluvium
Flooding: None
Water table: Present
Ponding duration: Brief
Available water capacity to 60-inch depth: Approximately 6.6 inches
Typical profile:
A—0 to 7 inches; loam
Bg—7 to 11 inches; loam
Cg—11 to 60 inches; very cobbly sandy loam

Additional Components

Mooseflat and similar soils: 6 percent
Foolhen and similar soils: 5 percent
Dunkleber and similar soils: 4 percent

Management Considerations

Finn

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

682E—Elve bouldery sandy loam, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 7,500
Mean annual precipitation: 20 to 30 inches
Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 17 inches; bouldery sandy loam

E—17 to 29 inches; very bouldery sandy loam

Bw—29 to 60 inches; very bouldery sandy loam

Additional Components

Loberg and similar soils: 8 percent

Ovando and similar soils: 7 percent

Management Considerations

Elve

- None

Loberg

- Low bearing strength
- Surface compaction hazard

Ovando

- Cutslope slumping
- Cutslope erosion

682F—Elve bouldery sandy loam, 25 to 50 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Moraines

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass
- subalpine fir/grouse whortleberry

Surface layer texture: Bouldery sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Alpine till

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 17 inches; bouldery sandy loam

E—17 to 29 inches; very bouldery sandy loam

Bw—29 to 60 inches; very bouldery sandy loam

Additional Components

Ovando and similar soils: 15 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Ovando

- Steep slopes
- Erodible surface
- Cutslope slumping
- Cutslope erosion

696E—Worock gravelly loam, dry, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 24 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Worock and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 6 inches; gravelly loam

E/Bt—6 to 17 inches; gravelly loam

Bt—17 to 34 inches; very gravelly clay loam

C—34 to 60 inches; very gravelly sandy clay loam

Additional Components

Evapo and similar soils: 4 percent

Loberg and similar soils: 4 percent

Rock outcrop: 4 percent

Danaher and similar soils: 3 percent

Management Considerations

Worock

- Low bearing strength
- Surface compaction hazard

Evapo

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Loberg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Danaher

- Low bearing strength
- Surface compaction hazard

701E—Rubick-Stecum complex, 15 to 45 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,790 to 7,630

Mean annual precipitation: 17 to 20 inches

Frost-free period: 30 to 50 days

Component Description

Rubick and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Backslope on mountains

Slope: 15 to 45 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly loam

E2—7 to 12 inches; very cobbly sandy loam

Bw—12 to 22 inches; very cobbly sandy loam

BC—22 to 60 inches; very channery sandy loam

Stecum and similar soils

Composition: 25 percent

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Landform:

- backslope on mountains
- shoulder on mountains

Slope: 15 to 45 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/dwarf huckleberry

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 48 inches

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly coarse sandy loam

BC—7 to 25 inches; very stony coarse sand

Cr—25 to 38 inches; bedrock

R—38 to 60 inches; bedrock

Additional Components

Libeg and similar soils: 14 percent

Rock outcrop: 1 percent

Management Considerations

Rubick

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Stecum

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard
- Cutslope slumping
- Cutslope erosion

Libeg

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

**702E—Maurice, very stony-Maurice-Sigbird, very stony,
complex, 12 to 35 percent slopes**

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,120 to 7,790

Mean annual precipitation: 18 to 21 inches

Frost-free period: 30 to 50 days

Component Description

Maurice, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Nose slope backslope on mountains

Slope: 15 to 35 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; gravelly loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Maurice and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Nose slope backslope on mountains

Slope: 12 to 25 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

- A1—0 to 5 inches; loam
- A2—5 to 12 inches; very channery loam
- Bw—12 to 21 inches; very channery loam
- BC—21 to 33 inches; very channery loam
- C—33 to 60 inches; very channery loam

Sigbird, very stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform: Nose slope backslope on mountains

Slope: 12 to 35 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- A—0 to 5 inches; very channery loam
- Bw—5 to 12 inches; very channery loam
- C—12 to 14 inches; extremely channery sandy loam
- R—14 to 60 inches; bedrock

Additional Components

Zonite, extremely stony and similar soils: 7 percent

Rock outcrop: 3 percent

Management Considerations

Maurice, very stony

- Low bearing strength
- Surface compaction hazard

Maurice

- Low bearing strength
- Surface compaction hazard

Sigbird, very stony

- Shallow soil
- Low bearing strength

Zonite, extremely stony

- Shallow soil
- Cutslope erosion

Rock outcrop

- Nonsoil material

**703G—Surdal, very stony-Rubble land complex,
30 to 70 percent slopes**

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,280 to 7,140

Mean annual precipitation: 17 to 21 inches

Frost-free period: 50 to 70 days

Component Description

Surdal, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on mountains

Slope: 30 to 70 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.10 to 5.00 percent stones, 3 to 40 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 7 inches; very channery loam

Bw—7 to 16 inches; very channery sandy loam

BC—16 to 28 inches; extremely channery sandy loam

R—28 to 60 inches; bedrock

Rubble land

Composition: 30 percent

Landform: None assigned

Additional Components

Sigbird and similar soils: 10 percent

Rock outcrop: 5 percent

Tiban, very stony and similar soils: 5 percent

Management Considerations

Surdal, very stony

- Steep slopes
- Erodible surface
- Low bearing strength

Rubble land

- Nonsoil material

Sigbird

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

Tiban, very stony

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

708D—Rubick-Moosejaw complex, 4 to 20 percent slopes

Interpretive focus: Riparian and forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,810 to 7,220

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Rubick and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Backslope on slumped mountains

Slope: 8 to 20 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/beargrass

Surface layer texture: Very cobbly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; very cobbly loam

E2—7 to 12 inches; very cobbly sandy loam

Bw—12 to 22 inches; very cobbly sandy loam

BC—22 to 60 inches; very channery sandy loam

Moosejaw and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive Cumulic Cryaquolls

Landform: Toeslope on mountains

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Mixed alluvium over alluvium derived from sandstone

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

Oe—0 to 4 inches; mucky peat

A—4 to 22 inches; gravelly sandy loam

Cg—22 to 48 inches; sandy loam

2Cg—48 to 72 inches; very gravelly coarse sand

Additional Components

Tepete and similar soils: 10 percent

Management Considerations

Rubick

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Moosejaw

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Tepete

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

712F—Rubick-Maurice complex, 20 to 50 percent slopes, very stony

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,990 to 7,810

Mean annual precipitation: 17 to 20 inches

Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; very channery loam

E2—7 to 12 inches; very cobbly sandy loam

Bw—12 to 22 inches; very cobbly sandy loam

BC—22 to 60 inches; very channery sandy loam

Maurice, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Meadows on mountain slopes

Slope: 20 to 50 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; channery loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Additional Components

Mawspring, very stony and similar soils: 14 percent

Sigbird, very stony and similar soils: 10 percent

Rock outcrop: 1 percent

Management Considerations

Rubick, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Maurice, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Mawspring, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

718E—Maurice-Libeg complex, 8 to 30 percent slopes, very stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,720 to 7,790

Mean annual precipitation: 15 to 21 inches

Frost-free period: 50 to 70 days

Component Description

Maurice, very stony and similar soils

Composition: 70 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Nose slope backslope on mountains

Slope: 8 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; gravelly loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Libeg, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Backslope on mountains

Slope: 8 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Rock fragments on the soil surface: 0.10 to 1.00 percent stones, 17 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.5 inches

Typical profile:

A—0 to 12 inches; channery loam

Bt—12 to 24 inches; very channery loam

BC—24 to 60 inches; very channery loam

Additional Components

Danielvil and similar soils: 5 percent
Sigbird, very stony and similar soils: 5 percent

Management Considerations

- Maurice, very stony
- Low bearing strength
 - Surface compaction hazard
- Libeg, very stony
- Low bearing strength
 - Surface compaction hazard
- Danielvil
- Low bearing strength
 - Surface compaction hazard
- Sigbird, very stony
- Shallow soil
 - Low bearing strength

731F—Rubick, stony-Worock complex, 20 to 50 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,710 to 7,740
Mean annual precipitation: 13 to 15 inches
Frost-free period: 30 to 50 days

Component Description

Rubick, stony and similar soils

Composition: 75 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts
Landform: Backslope on north-tending mountains
Slope: 20 to 50 percent, northwest to east aspects
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass-pinegrass phase
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Colluvium derived from argillite
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.0 inches
Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; very gravelly loam
- E2—7 to 12 inches; very cobbly sandy loam
- Bw—12 to 22 inches; very cobbly sandy loam
- BC—22 to 60 inches; very channery sandy loam

Worock and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- backslope on north-tending mountains
- footslope on north-tending mountains

Slope: 20 to 40 percent, northwest to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 13 inches; gravelly loam
- E/Bt—13 to 19 inches; very gravelly loam
- Bt—19 to 33 inches; very gravelly clay loam
- BC—33 to 60 inches; very channery clay loam

Additional Components

Rubick, very stony, greater slopes and similar soils: 5 percent

Sigbird, very stony and similar soils: 4 percent

Rock outcrop: 1 percent

Management Considerations

Rubick, stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubick, very stony, greater slopes

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Sigbird, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

734D—Bullrey-Maurice, very stony-Libeg complex, 4 to 15 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,430 to 7,690

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Bullrey and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform: Gentle mountain slopes

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A1—0 to 7 inches; gravelly loam

A2—7 to 15 inches; very gravelly loam

Bw—15 to 24 inches; very gravelly loam

C—24 to 60 inches; very gravelly sandy loam

Maurice, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Gentle mountain slopes

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; channery loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Libeg and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Gentle mountain slopes

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.5 inches

Typical profile:

A—0 to 12 inches; channery loam

Bt—12 to 24 inches; very channery loam

BC—24 to 60 inches; very channery loam

Additional Components

Mawspring, very stony and similar soils: 10 percent

Management Considerations

Bullrey

- Low bearing strength

Maurice, very stony

- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Mawspring, very stony

- Low bearing strength
- Surface compaction hazard

**738E—Rubick-Surdal complex, 15 to 35 percent slopes,
very stony**

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,820 to 8,140

Mean annual precipitation: 15 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Rubick, very stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform: Mountain slopes

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 15 to 35 percent, northwest to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; very channery loam

E2—7 to 12 inches; very cobbly sandy loam

Bw—12 to 22 inches; very cobbly sandy loam

BC—22 to 60 inches; very channery sandy loam

Surdal, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Mountain slopes

Slope: 15 to 30 percent, northwest to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; very channery loam

Bw—7 to 16 inches; very channery sandy loam

BC—16 to 28 inches; extremely channery sandy loam

R—28 to 60 inches; bedrock

Additional Components

Ratiopeak, very stony and similar soils: 10 percent

Sigbird, very stony and similar soils: 7 percent

Rock outcrop: 3 percent

Management Considerations

Rubick, very stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Surdal, very stony

- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
 - Surface compaction hazard
- Ratiopeak, very stony
- Low bearing strength
 - Surface compaction hazard
- Sigbird, very stony
- Erodible surface
 - Shallow soil
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

739E—Maurice-Surdal-Mawspring complex, 12 to 35 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,810 to 7,770

Mean annual precipitation: 13 to 19 inches

Frost-free period: 50 to 70 days

Component Description

Maurice, stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Nose slope backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; very channery loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Surdal, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on mountains

Slope: 15 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.05 to 0.10 percent stones, 40 to 50 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 7 inches; very channery loam

Bw—7 to 16 inches; very channery sandy loam

BC—16 to 28 inches; extremely channery sandy loam

R—28 to 60 inches; bedrock

Mawspring, stony and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocrypts

Landform:

- mountain slopes
- swales

Slope: 12 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

A—0 to 6 inches; very channery loam

Bw—6 to 18 inches; very channery loam

BC—18 to 33 inches; extremely channery sandy loam

C—33 to 60 inches; extremely channery sandy loam

Additional Components

Sigbird, very stony and similar soils: 14 percent

Rock outcrop: 6 percent

Management Considerations

Maurice, stony

- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength

Mawspring, stony

- Low bearing strength
- Surface compaction hazard

Sigbird, very stony

- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

741F—Maurice-Sigbird-Surdal complex, 20 to 50 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,280 to 8,370

Mean annual precipitation: 13 to 17 inches

Frost-free period: 50 to 70 days

Component Description

Maurice, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: North-tending mountain slopes

Slope: 30 to 50 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Channery loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, argillite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A1—0 to 5 inches; channery loam

A2—5 to 12 inches; very channery loam

Bw—12 to 21 inches; very channery loam

BC—21 to 33 inches; very channery loam

C—33 to 60 inches; very channery loam

Sigbird, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform:

- north-tending mountains
- ridges

Slope: 20 to 45 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.01 to 0.50 percent stones, 27 to 100 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 5 inches; very channery loam

Bw—5 to 12 inches; very channery loam

C—12 to 14 inches; extremely channery sandy loam

R—14 to 60 inches; bedrock

Surdal, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: North-tending mountain slopes

Slope: 20 to 50 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Rock fragments on the soil surface: 0.05 to 0.10 percent stones, 40 to 50 feet apart, argillite

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 7 inches; very channery loam

Bw—7 to 16 inches; very channery sandy loam

BC—16 to 28 inches; extremely channery sandy loam

R—28 to 60 inches; bedrock

Additional Components

Tiban, very stony and similar soils: 6 percent

Rock outcrop: 4 percent

Management Considerations

Maurice, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sigbird, stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Surdal, stony

- Steep slopes
- Erodible surface
- Low bearing strength

Tiban, very stony

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material

744E—Sigbird, very shallow-Sigbird-Surdal complex, 8 to 25 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,090 to 7,090

Mean annual precipitation: 14 to 18 inches

Frost-free period: 50 to 70 days

Component Description

Sigbird, very shallow and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform:

- shoulder on hills
- summit on hills

Slope: 8 to 20 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Extremely channery loam

Depth to restrictive feature: Lithic bedrock: 5 to 10 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.6 inches

Typical profile:

A—0 to 3 inches; extremely channery loam

Bw—3 to 8 inches; extremely channery loam

R—8 to 60 inches; bedrock

Sigbird and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Landform:

- summit on hills
- backslope on hills

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- A—0 to 5 inches; very channery loam
- Bw—5 to 12 inches; very channery loam
- C—12 to 14 inches; extremely channery sandy loam
- R—14 to 60 inches; bedrock

Surdal and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on hills

Slope: 12 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very channery loam

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from argillite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 7 inches; very channery loam
- Bw—7 to 16 inches; very channery sandy loam
- BC—16 to 28 inches; extremely channery sandy loam
- R—28 to 60 inches; bedrock

Additional Components

Maurice and similar soils: 10 percent

Rock outcrop: 8 percent

Kilgore and similar soils: 2 percent

Management Considerations

Sigbird, very shallow

- Surface rock fragments
- Shallow soil
- Low bearing strength

Sigbird

- Shallow soil
- Low bearing strength

Surdal

- Low bearing strength

Maurice

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Kilgore

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

744Ej—Shawmut, bouldery-Shawmut, stony-Tolbert, bouldery, complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shawmut, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

- A—0 to 7 inches; gravelly loam
- Bt—7 to 19 inches; very cobbly clay loam
- Bk1—19 to 32 inches; very cobbly loam
- Bk2—32 to 60 inches; very cobbly loam

Shawmut, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.7 inches

Typical profile:

- A—0 to 5 inches; very gravelly loam
- Bt—5 to 15 inches; very gravelly sandy clay loam

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Bk1—15 to 22 inches; very gravelly sandy clay loam

Bk2—22 to 60 inches; extremely gravelly sandy loam

Tolbert, bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- interfluves
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone and/or basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bt—7 to 12 inches; very cobbly clay loam

R—12 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop, volcanic, sandstone: 6 percent

Blaincreek, very stony and similar soils: 5 percent

Martinsdale, stony and similar soils: 4 percent

Management Considerations

Shawmut, bouldery

- Low bearing strength
- Surface compaction hazard

Shawmut, stony

- Low bearing strength
- Surface compaction hazard

Tolbert, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic, sandstone

- Nonsoil material

Blaincreek, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Martinsdale, stony

- Low bearing strength
- Surface compaction hazard

745E—Shawmut, bouldery-Shawmut, very bouldery-Tolbert, bouldery, complex, 15 to 45 percent slopes, dry

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shawmut, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 7 inches; gravelly sandy clay loam
- Bt—7 to 19 inches; very cobbly clay loam
- Bk1—19 to 32 inches; very cobbly loam
- Bk2—32 to 60 inches; very cobbly loam

Shawmut, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 7 inches; gravelly sandy clay loam
- Bt—7 to 19 inches; very cobbly clay loam
- Bk1—19 to 32 inches; very cobbly loam
- Bk2—32 to 60 inches; very cobbly loam

Tolbert, bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- interfluves
- ridges

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone and/or basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 7 inches; very cobbly loam
- Bt—7 to 12 inches; very cobbly clay loam
- R—12 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop, volcanic: 6 percent

Martinsdale, stony and similar soils: 5 percent

Blaincreek, very stony and similar soils: 4 percent

Management Considerations

Shawmut, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Shawmut, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tolbert, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Martinsdale, stony

- Low bearing strength
- Surface compaction hazard

Blaincreek, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

746E—Roy-Fergus complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 15 to 19 inches

Frost-free period: 70 to 90 days

Component Description

Roy and similar soils

Composition: 50 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- A—0 to 9 inches; cobbly loam
- Bt—9 to 38 inches; very cobbly clay loam
- BcK—38 to 60 inches; very cobbly clay loam

Fergus and similar soils

Composition: 35 percent

Taxonomic class: Fine, smectitic, frigid Vertic Argiustolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.3 inches

Typical profile:

- A—0 to 10 inches; loam
- Bt1—10 to 19 inches; clay
- Bt2—19 to 25 inches; clay loam
- Bk—25 to 60 inches; clay loam

Additional Components

- Shanley and similar soils: 8 percent
- Braziel and similar soils: 7 percent

Management Considerations

Roy

- Low bearing strength
- Surface compaction hazard

Fergus

- Low bearing strength
- Surface compaction hazard

Shanley

- Low bearing strength
- Surface compaction hazard

Braziel

- Low bearing strength
- Surface compaction hazard

**777E—Rock outcrop-Clugulch-Bobowic complex,
15 to 35 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Rock outcrop, granite

Composition: 40 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; sandy loam

Bw—5 to 9 inches; gravelly sandy loam

R—9 to 60 inches; unweathered bedrock

Bobowic and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/common juniper
- Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 12 inches; sandy loam

Bw—12 to 22 inches; gravelly coarse sandy loam

Cr—22 to 35 inches; weathered bedrock

R—35 to 60 inches; unweathered bedrock

Additional Components

Tepecreek, bouldery and similar soils: 5 percent

Caseypeak, very bouldery and similar soils: 4 percent

Hiore, stony and similar soils: 3 percent

Peeler and similar soils: 3 percent

Management Considerations

Rock outcrop, granite

- Nonsoil material

Clugulch

- Shallow soil

Bobowic

- None

Tepecreek, bouldery

- Low bearing strength
- Surface compaction hazard

Caseypeak, very bouldery

- Shallow soil
- Low bearing strength

Hiore, stony

- None

Peeler

- Steep slopes
- Erodible surface
- Surface compaction hazard

777F—Rock outcrop-Clugulch-Bobowic complex, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 40 to 70 days

Component Description

Rock outcrop, granite

Composition: 45 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; sandy loam
- Bw—5 to 9 inches; gravelly sandy loam
- R—9 to 60 inches; unweathered bedrock

Bobowic and similar soils

Composition: 10 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocryepts

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Landform:

- mountain slopes
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 12 inches; sandy loam

Bw—12 to 22 inches; gravelly coarse sandy loam

Cr—22 to 35 inches; weathered bedrock

R—35 to 60 inches; unweathered bedrock

Additional Components

Tepecreek, very bouldery and similar soils: 5 percent

Caseypeak, rubbly and similar soils: 4 percent

Hiore, stony and similar soils: 3 percent

Peeler and similar soils: 3 percent

Management Considerations

Rock outcrop, granite

- Nonsoil material

Clugulch

- Steep slopes
- Erodible surface
- Shallow soil

Bobowic

- Steep slopes
- Erodible surface

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Caseypeak, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Hiore, stony

- Steep slopes
- Erodible surface

Peeler

- Steep slopes
- Erodible surface
- Surface compaction hazard

782E—Evaro stony ashy loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,000 to 9,000

Mean annual precipitation: 20 to 40 inches

Frost-free period: 20 to 70 days

Component Description

Evaro and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocrypts

Landform: Mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Stony ashy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and silty volcanic ash over gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 8 inches; stony ashy loam

2E and Bt1—8 to 25 inches; very gravelly loam

2E and Bt2—25 to 60 inches; extremely gravelly sandy loam

Additional Components

Phillcher and similar soils: 5 percent

Rock outcrop: 5 percent

Waldbillig and similar soils: 5 percent

Management Considerations

Evaro

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Phillcher

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Waldbillig

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

786D—Winkler gravelly loam, cool, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and Bt—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Low bearing strength

Rock outcrop

- Nonsoil material

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

786E—Winkler gravelly loam, cool, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/pinegrass
- Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and B_t—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Low bearing strength

Rock outcrop

- Nonsoil material

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

786F—Winkler gravelly loam, cool, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and B_t—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop

- Nonsoil material

Whitlash

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

**788F—Whitecow, cool-Rock outcrop complex,
35 to 60 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calciustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bk1—4 to 34 inches; very gravelly loam
- Bk2—34 to 60 inches; extremely gravelly loam

Rock outcrop

Composition: 20 percent

Landform: None assigned

Additional Components

Lap and similar soils: 5 percent

Trapps and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop
- Nonsoil material
- Lap
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Trapps
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Yreka
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

791F—Mohaggin-Rubble land complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,800 to 9,200

Mean annual precipitation: 22 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Mohaggin and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystricrypts

Landform: Mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Stony ashy very fine sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

Oe—2 to 5 inches; moderately decomposed plant material

A—5 to 14 inches; stony ashy very fine sandy loam

2Bw—14 to 32 inches; very gravelly sandy loam

2C—32 to 60 inches; very cobbly loamy sand

Rubble land

Composition: 25 percent

Definition: Rubble land consists of areas of cobbles, stones and boulders. Commonly, rubble land is at the base of mountains, hills and escarpments but some areas are deposits of cobbles, stones and boulders left on mountain slopes by glaciation.

Landform: None assigned

Additional Components

Cowood and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Mohaggin

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land

- Nonsoil material

Cowood

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

791G—Mohaggin-Rubble land complex, 60 to 80 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 7,800 to 9,200

Mean annual precipitation: 22 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Mohaggin and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Dystricrypts

Landform: Mountain slopes

Slope: 60 to 80 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Stony ashy very fine sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Volcanic ash over colluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- Oe—2 to 5 inches; moderately decomposed plant material
- A—5 to 14 inches; stony ashy very fine sandy loam
- 2Bw—14 to 32 inches; very gravelly sandy loam
- 2C—32 to 60 inches; very cobbly loamy sand

Rubble land

Composition: 25 percent

Definition: Rubble land consists of areas of cobbles, stones and boulders. Commonly, rubble land is at the base of mountains, hills and escarpments but some areas are deposits of cobbles, stones and boulders left on mountain slopes by glaciation.

Landform: None assigned

Additional Components

Cowood and similar soils: 10 percent

Rock outcrop: 5 percent

Management Considerations

Mohaggin

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Surface compaction hazard

Rubble land

- Nonsoil material

Cowood

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

797E—Waldbillig-Elve complex, 8 to 25 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 8,000

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Waldbillig and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Andic Eutrocrypts

Landform: Moraines

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/beargrass-blue huckleberry phase

Surface layer texture: Gravelly ashy loam

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Volcanic ash over gravelly till

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

Bw—2 to 12 inches; gravelly ashy loam

2E and Bt1—12 to 28 inches; very gravelly sandy loam

2E and Bt2—28 to 60 inches; very gravelly sandy loam

Elve and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Mountain slopes

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- Douglas-fir/twinflower
- Douglas-fir/pinegrass
- subalpine fir/beargrass
- subalpine fir/mountain gooseberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

Oe—0 to 2 inches; moderately decomposed plant material

E—2 to 19 inches; gravelly loam

Bw—19 to 35 inches; extremely gravelly sandy loam

BC—35 to 60 inches; extremely gravelly loam

Additional Components

Elve, greater slopes and similar soils: 6 percent

Evavo and similar soils: 5 percent

Loberg and similar soils: 4 percent

Management Considerations

Waldbillig

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

Elve, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength

Evavo

- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
 - Surface compaction hazard
- Loberg
- Low bearing strength
 - Surface compaction hazard

799E—Bignell-Yreka-Crow complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 26 inches

Frost-free period: 70 to 90 days

Component Description

Bignell and similar soils

Composition: 55 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly loam
- E/Bt—9 to 15 inches; very gravelly loam
- Bt—15 to 60 inches; very gravelly clay

Crow and similar soils

Composition: 15 percent

Taxonomic class: Fine, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 11 inches; loam

Bt/E—11 to 20 inches; clay loam

Bt1—20 to 31 inches; clay

Bt2—31 to 60 inches; sandy clay loam

Yreka and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 5 inches; gravelly loam

E/Bt—5 to 19 inches; very gravelly loam

Bt—19 to 60 inches; very cobbly clay loam

Additional Components

Rock outcrop: 4 percent

Trapps and similar soils: 4 percent

Whitlash and similar soils: 4 percent

Winkler and similar soils: 3 percent

Management Considerations

Bignell

- Low bearing strength
- Surface compaction hazard

Crow

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Trapps

- Low bearing strength
- Surface compaction hazard

Whitlash

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Winkler

- Low bearing strength

814E—Whitore complex, 12 to 45 percent slopes, stony

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 7,250

Mean annual precipitation: 13 to 17 inches

Frost-free period: 40 to 70 days

Component Description

Whitore, stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Backslope on north-tending mountains

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 5 inches; very gravelly loam

E—5 to 8 inches; gravelly loam

Bw—8 to 14 inches; very gravelly loam

Bk1—14 to 21 inches; very gravelly loam

Bk2—21 to 60 inches; very gravelly loam

Whitore, stony, gravelly loam and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Head slope footslope on north-tending mountains

Slope: 12 to 30 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 5 inches; gravelly loam

E—5 to 8 inches; gravelly loam

Bw—8 to 14 inches; very gravelly loam

Bk1—14 to 21 inches; very gravelly loam

Bk2—21 to 60 inches; very gravelly loam

Additional Components

Tropal, very stony and similar soils: 8 percent

Tropal, very stony, greater slopes and similar soils: 2 percent

Management Considerations

Whitore, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitore, stony, gravelly loam

- Low bearing strength
- Surface compaction hazard

Tropal, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tropal, very stony, greater slopes

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

820E—Whitore, stony-Tropal, very stony-Raynesford, stony, complex, 12 to 45 percent slopes

Interpretive focus: Forestland and rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 7,270

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Whitore, stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Backslope on mountains

Slope: 15 to 40 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 5 inches; very gravelly loam

E—5 to 8 inches; gravelly loam

Bw—8 to 14 inches; very gravelly loam

Bk1—14 to 21 inches; very gravelly loam

Bk2—21 to 60 inches; very gravelly loam

Tropal, very stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, carbonatic Lithic Calcicryepts

Landform:

- nose slope shoulder on mountains
- nose slope summit on mountains

Slope: 12 to 45 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, limestone, unspecified

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 4 inches; very gravelly loam

Bk—4 to 12 inches; very gravelly loam

R—12 to 60 inches; bedrock

Raynesford, stony and similar soils

Composition: 18 percent

Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent, west to southeast aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous loamy alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.8 inches

Typical profile:

A1—0 to 5 inches; gravelly loam

A2—5 to 10 inches; gravelly loam

Bk1—10 to 23 inches; gravelly loam

Bk2—23 to 60 inches; gravelly silt loam

Additional Components

Rock outcrop: 2 percent

Management Considerations

Whitore, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tropal, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Raynesford, stony

- Low bearing strength

Rock outcrop

- Nonsoil material

823E—Skaggs-Raynesford-Tropal, very stony, complex, 8 to 35 percent slopes

Interpretive focus: Rangeland and forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,630 to 7,270

Mean annual precipitation: 14 to 18 inches

Frost-free period: 50 to 70 days

Component Description

Skaggs and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform: Backslope on hills

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Gravelly loam
Depth to restrictive feature: Lithic bedrock: 20 to 40 inches
Drainage class: Well drained
Parent material: Colluvium over residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 3.7 inches
Typical profile:
A—0 to 8 inches; gravelly loam
Bk1—8 to 18 inches; gravelly loam
Bk2—18 to 29 inches; very gravelly loam
R—29 to 60 inches; bedrock

Raynesford and similar soils

Composition: 30 percent
Taxonomic class: Fine-loamy, carbonatic Calcic Haplocryolls
Landform: Foothlope on hills
Slope: 8 to 30 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Calcareous loamy alluvium
Flooding: None
Available water capacity to 60-inch depth: Approximately 9.8 inches
Typical profile:
A1—0 to 5 inches; loam
A2—5 to 10 inches; gravelly loam
Bk1—10 to 23 inches; gravelly loam
Bk2—23 to 60 inches; gravelly silt loam

Tropal, very stony and similar soils

Composition: 20 percent
Taxonomic class: Loamy-skeletal, carbonatic Lithic Eutrocryepts
Landform: Forested ridges
Slope: 15 to 35 percent
Native plant cover type: Forestland
Habitat type(s): Limber pine/Idaho fescue
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, limestone, unspecified
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Residuum weathered from limestone
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.1 inches
Typical profile:
A—0 to 4 inches; very gravelly loam
Bk—4 to 12 inches; very gravelly loam
R—12 to 60 inches; bedrock

Additional Components

Rock outcrop: 5 percent

Management Considerations

Skaggs

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Raynesford

- Low bearing strength

Tropal, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

825E—Skaggs-Whitore complex, 12 to 35 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,640 to 7,230

Mean annual precipitation: 14 to 16 inches

Frost-free period: 50 to 70 days

Component Description

Skaggs, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform: Backslope on south-tending hills

Slope: 12 to 35 percent, east to west aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Colluvium over residuum weathered from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

A—0 to 8 inches; very gravelly loam

Bk1—8 to 18 inches; gravelly loam

Bk2—18 to 29 inches; very gravelly loam

R—29 to 60 inches; bedrock

Whitore, stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform: Backslope on south-tending hills

Slope: 12 to 30 percent, east to west aspects

Native plant cover type: Rangeland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, limestone, unspecified

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 5 inches; very gravelly loam

E—5 to 8 inches; gravelly loam

Bw—8 to 14 inches; very gravelly loam

Bk1—14 to 21 inches; very gravelly loam

Bk2—21 to 60 inches; very gravelly loam

Additional Components

Starley, very stony and similar soils: 14 percent

Rock outcrop: 1 percent

Management Considerations

Skaggs, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Whitore, stony

- Low bearing strength
- Surface compaction hazard

Starley, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

844A—Bandy-Blossberg complex, 0 to 2 percent slopes, rarely flooded

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,200

Mean annual precipitation: 10 to 19 inches

Frost-free period: 70 to 105 days

Component Description

Bandy and similar soils

Composition: 45 percent

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Endoaquolls

Landform: Flood plains

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 0 to 4 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60-inch depth: Approximately 3.4 inches
Typical profile:
A—0 to 6 inches; loam
Bw1—6 to 14 inches; gravelly loam
Bw2—14 to 21 inches; gravelly loam
2C—21 to 60 inches; very gravelly sand

Blossberg and similar soils

Composition: 40 percent
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid
Typic Endoaquolls
Landform: Flood plains
Slope: 0 to 4 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Loam
Depth to restrictive feature: None noted
Drainage class: Poorly drained
Parent material: Loamy alluvium over sandy and gravelly alluvium
Flooding: Rare
Water table: Present
Available water capacity to 60-inch depth: Approximately 5.2 inches
Typical profile:
Oi—0 to 1 inches; slightly decomposed plant material
A—1 to 15 inches; loam
Bg1—15 to 24 inches; loam
Bg2—24 to 29 inches; gravelly loam
2Cg—29 to 60 inches; very gravelly loamy coarse sand

Additional Components

Flintcreek and similar soils: 4 percent
Mannixlee and similar soils: 4 percent
Poronto and similar soils: 4 percent
Windlass and similar soils: 3 percent

Management Considerations

Bandy

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Blossberg

- High water table
- High windthrow hazard

- Low bearing strength
- Surface compaction hazard

Flintcreek

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mannixlee

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Poronto

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Windlass

- High water table
- Low bearing strength
- Surface compaction hazard

854E—Libeg-Monad-Copenhaver complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,700 to 7,500

Mean annual precipitation: 18 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Libeg and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium and/or residuum weathered from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

A—0 to 14 inches; gravelly loam

Bt—14 to 60 inches; very channery clay loam

Monad and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Residuum and/or colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.2 inches

Typical profile:

A—0 to 11 inches; loam

Bt1—11 to 25 inches; clay loam

Bt2—25 to 60 inches; gravelly clay loam

Copenhaver and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform: Hills

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from basalt and/or andesite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

A—0 to 5 inches; gravelly loam

Bt2—5 to 14 inches; very gravelly clay loam

R—14 to 60 inches; unweathered bedrock

Additional Components

Libeg, very cobbly and similar soils: 4 percent

Rock outcrop: 4 percent

Roy and similar soils: 4 percent

Libeg, greater slopes and similar soils: 3 percent

Management Considerations

Libeg

- Low bearing strength
- Surface compaction hazard

Monad

- Low bearing strength
- Surface compaction hazard

Copenhaver

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg, very cobbly

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Roy

- Low bearing strength
- Surface compaction hazard

Libeg, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

886F—Winkler-Rubble land-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,400

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Winkler and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- O_i—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; gravelly loam
- E—5 to 30 inches; very gravelly sandy loam
- E and B_t—30 to 45 inches; extremely gravelly loam
- C—45 to 60 inches; extremely gravelly sandy loam

Rubble land

Composition: 20 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders.

Landform: None assigned

Rock outcrop

Composition: 15 percent

Landform: None assigned

Additional Components

Whitecow and similar soils: 5 percent

Whitlash and similar soils: 5 percent

Yreka and similar soils: 5 percent

Management Considerations

Winkler

- Steep slopes
- Erodible surface
- Low bearing strength

Rubble land

- Nonsoil material

Rock outcrop

- Nonsoil material

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitlash

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

901E—Sebud-Poin-Tiban complex, 15 to 45 percent slopes, extremely stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,380 to 7,860

Mean annual precipitation: 14 to 18 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, extremely stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 40 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Soil Survey of Deerlodge National Forest Area, Montana

Rock fragments on the soil surface: 3 to 15 percent boulders, 3 to 10 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bw—10 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Poin, extremely stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- nose slope shoulder on mountains
- nose slope backslope on mountains

Slope: 30 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly sandy loam

Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 8 feet apart, quartzite

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Residuum weathered from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 5 inches; very cobbly sandy loam

Bw—5 to 12 inches; very cobbly loam

C—12 to 15 inches; extremely cobbly sandy loam

R—15 to 60 inches; bedrock

Tiban, extremely stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on mountains

Slope: 30 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 3 to 15 percent stones, 2 to 8 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

A—0 to 8 inches; very cobbly loam

Bw—8 to 16 inches; very cobbly loam

Bk—16 to 60 inches; very gravelly loam

Additional Components

Libeg, extremely stony and similar soils: 4 percent
Rock outcrop: 1 percent

Management Considerations

Sebud, extremely stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin, extremely stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Tiban, extremely stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Libeg, extremely stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

903B—Foolhen loam, 0 to 4 percent slopes, rarely flooded

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,960 to 6,800

Mean annual precipitation: 15 to 22 inches

Frost-free period: 30 to 70 days

Component Description

Foolhen and similar soils

Composition: 85 percent

Taxonomic class: Fine-loamy, mixed, superactive Typic Cryaquolls

Landform: Flood plains

Slope: 0 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky peat

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Fine-loamy alluvium

Flooding: Rare

Water table: Present

Ponding duration: Brief

Available water capacity to 60-inch depth: Approximately 7.2 inches

Typical profile:

- Oi—0 to 6 inches; slightly decomposed plant material
- Oe—6 to 11 inches; mucky peat
- A—11 to 18 inches; loam
- Bg—18 to 29 inches; loam
- Cg1—29 to 36 inches; loam
- Cg2—36 to 60 inches; gravelly loam

Additional Components

- Dunkleber and similar soils: 4 percent
- Finn and similar soils: 4 percent
- Mooseflat and similar soils: 4 percent
- Kilgore and similar soils: 3 percent

Management Considerations

Foolhen

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Dunkleber

- High water table
- High windthrow hazard
- Hydrophobic surface layer
- Surface compaction hazard

Finn

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Mooseflat

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Kilgore

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

904D—Sebud, stony-Redchief complex, 8 to 25 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,040 to 7,180

Mean annual precipitation: 19 to 23 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, stony and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Landslides

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bw—10 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Redchief and similar soils

Composition: 20 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform: Landslides

Slope: 8 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.2 inches

Typical profile:

A1—0 to 5 inches; gravelly loam

A2—5 to 12 inches; very gravelly loam

Bt1—12 to 21 inches; very cobbly clay loam

Bt2—21 to 60 inches; very gravelly clay loam

Additional Components

Foxgulch and similar soils: 10 percent

Sebud, stony, greater slopes and similar soils: 5 percent

Management Considerations

Sebud, stony

- Mass movement potential
- Low bearing strength
- Surface compaction hazard
- Cutslope slumping

Redchief

- Mass movement potential
- Low bearing strength

- Surface compaction hazard
 - Cutslope slumping
- Foxgulch
- High water table
 - Hydrophobic surface layer
 - Low bearing strength
 - Surface compaction hazard
- Sebud, stony, greater slopes
- Mass movement potential
 - Low bearing strength
 - Surface compaction hazard
 - Cutslope slumping

905E—Tigeron, stony-Rubick, very stony, complex, 15 to 45 percent slopes

Interpretive focus: Forestland
Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,720 to 7,860
Mean annual precipitation: 14 to 20 inches
Frost-free period: 50 to 70 days

Component Description

Tigeron, stony and similar soils

Composition: 50 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs
Landform: Backslope on mountains
Slope: 15 to 35 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/pinegrass
Surface layer texture: Very cobbly sandy loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Colluvium derived from quartzite
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.9 inches
Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E1—2 to 7 inches; very cobbly sandy loam
- E2—7 to 13 inches; very cobbly sandy loam
- E and Bt—13 to 18 inches; very cobbly sandy loam
- Bt—18 to 34 inches; very cobbly sandy clay loam
- BC—34 to 60 inches; very gravelly sandy loam

Rubick, very stony and similar soils

Composition: 35 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts
Landform: Backslope on mountains
Slope: 15 to 45 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very cobbly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 3 inches; very cobbly sandy loam

E1—3 to 8 inches; very cobbly sandy loam

E2—8 to 13 inches; very cobbly sandy loam

Bw—13 to 27 inches; very cobbly sandy loam

BC—27 to 60 inches; extremely stony loamy sand

Additional Components

Tiban, very stony and similar soils: 10 percent

Silas and similar soils: 5 percent

Management Considerations

Tigeron, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubick, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tiban, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Silas

- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

906E—Rubick, very stony-Tigeron, stony, complex, 15 to 45 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,950 to 7,410

Mean annual precipitation: 14 to 17 inches

Frost-free period: 30 to 50 days

Component Description

Rubick, very stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Backslope on mountains

Slope: 15 to 45 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones, 7 to 40 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 3 inches; very gravelly sandy loam

E1—3 to 8 inches; very cobbly sandy loam

E2—8 to 13 inches; very cobbly sandy loam

Bw—13 to 27 inches; very cobbly sandy loam

BC—27 to 60 inches; extremely stony loamy sand

Tigeron, stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Backslope on mountains

Slope: 15 to 35 percent, west to southeast aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly loam

E2—7 to 13 inches; very cobbly sandy loam

E and Bt—13 to 18 inches; very cobbly sandy loam

Bt—18 to 34 inches; very cobbly sandy clay loam

BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Rock outcrop: 5 percent

Silas, stony and similar soils: 5 percent

Management Considerations

Rubick, very stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tigeron, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Silas, stony

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

908E—Sebud-Tiban-Ratiopeak complex, 12 to 30 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,560 to 7,580

Mean annual precipitation: 15 to 18 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on south-tending mountains

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bw—10 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Tiban, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on south-tending mountains

Slope: 15 to 30 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Calcareous colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

A—0 to 8 inches; very cobbly loam

Bw—8 to 16 inches; very cobbly loam

Bk—16 to 60 inches; very gravelly loam

Ratiopeak, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- footslope on south-tending mountains
- backslope on south-tending mountains

Slope: 12 to 25 percent, east to northwest aspects

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bt1—10 to 14 inches; very cobbly loam

Bt2—14 to 26 inches; very cobbly sandy clay loam

Bk—26 to 60 inches; very cobbly sandy loam

Additional Components

Sebud, very stony, greater slopes and similar soils: 9 percent

Poin, very stony and similar soils: 5 percent

Rock outcrop: 1 percent

Management Considerations

Sebud, stony

- Low bearing strength
- Surface compaction hazard

Tiban, stony

- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

Sebud, very stony, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

911E—Sebud, stony-Adel complex, 12 to 30 percent slopes

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,820 to 7,510

Mean annual precipitation: 16 to 20 inches

Frost-free period: 30 to 50 days

Component Description

Sebud, stony and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform: Backslope on south-tending mountains

Slope: 15 to 30 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bw—10 to 38 inches; very cobbly sandy loam

BC—38 to 60 inches; very cobbly sandy loam

Adel and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls

Landform:

- backslope on south-tending mountains
- swales

Slope: 12 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.7 inches

Typical profile:

- A1—0 to 8 inches; gravelly loam
- A2—8 to 24 inches; silt loam
- A3—24 to 33 inches; silt loam
- Bw1—33 to 45 inches; silty clay loam
- Bw2—45 to 60 inches; clay loam

Additional Components

Sebud, very stony and similar soils: 10 percent

Ratiopeak, stony and similar soils: 5 percent

Management Considerations

Sebud, stony

- Low bearing strength
- Surface compaction hazard

Adel

- Low bearing strength
- Surface compaction hazard

Sebud, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

912D—Ratiopeak-Redchief complex, 4 to 15 percent slopes, stony

Interpretive focus: Rangeland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,280 to 7,320

Mean annual precipitation: 19 to 24 inches

Frost-free period: 30 to 50 days

Component Description

Ratiopeak, stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform: Gentle mountain slopes

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

A1—0 to 4 inches; very cobbly loam

A2—4 to 10 inches; very cobbly loam

Bt1—10 to 14 inches; very cobbly loam

Bt2—14 to 26 inches; very cobbly sandy clay loam

Bk—26 to 60 inches; very cobbly sandy loam

Redchief, stony and similar soils

Composition: 25 percent

Taxonomic class: Clayey-skeletal, smectitic Ustic Argicryolls

Landform: Gentle mountain slopes

Slope: 4 to 12 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.2 inches

Typical profile:

A1—0 to 5 inches; cobbly loam

A2—5 to 12 inches; very gravelly loam

Bt1—12 to 21 inches; very cobbly clay loam

Bt2—21 to 60 inches; very gravelly clay loam

Additional Components

Monaberg, stony and similar soils: 10 percent

Sebud, very stony and similar soils: 5 percent

Management Considerations

Ratiopeak, stony

- Low bearing strength
- Surface compaction hazard

Redchief, stony

- Low bearing strength
- Surface compaction hazard

Monaberg, stony

- Low bearing strength
- Surface compaction hazard

Sebud, very stony

- Low bearing strength
- Surface compaction hazard

913E—Rubick gravelly sandy loam, 8 to 30 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,660 to 7,430

Mean annual precipitation: 18 to 22 inches

Frost-free period: 30 to 50 days

Component Description

Rubick and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Backslope on mountains

Slope: 8 to 30 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Lodgepole pine/pinegrass

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 3 inches; gravelly sandy loam

E1—3 to 8 inches; very cobbly sandy loam

E2—8 to 13 inches; very cobbly sandy loam

Bw—13 to 27 inches; very cobbly sandy loam

BC—27 to 60 inches; extremely stony loamy sand

Additional Components

Tigeron and similar soils: 10 percent

Rubick, greater slopes and similar soils: 5 percent

Management Considerations

Rubick

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tigeron

- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Rubick, greater slopes

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

939F—Evaro, stony-Tigeron complex, 20 to 50 percent slopes

Interpretive focus: Forestland

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,950 to 7,640

Mean annual precipitation: 15 to 17 inches

Frost-free period: 30 to 50 days

Component Description

Evaro, stony and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lamellic Eutrocryepts

Landform: Backslope on north-tending mountain slopes

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly ashy sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones, 40 to 100 feet apart, quartzite

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

Oe—1 to 3 inches; moderately decomposed plant material

A—3 to 8 inches; gravelly ashy sandy loam

E—8 to 21 inches; very gravelly sandy loam

E and Bt—21 to 60 inches; very gravelly sandy clay loam

Tigeron and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform: Head slope backslope on north-tending mountains

Slope: 20 to 50 percent, west to east aspects

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Alluvium and/or colluvium derived from quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.9 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E1—2 to 7 inches; gravelly sandy loam

E2—7 to 13 inches; very cobbly sandy loam

E and Bt—13 to 18 inches; very cobbly sandy loam

Bt—18 to 34 inches; very cobbly sandy clay loam

BC—34 to 60 inches; very gravelly sandy loam

Additional Components

Poin, very stony and similar soils: 4 percent

Rock outcrop: 1 percent

Management Considerations

Evaro, stony

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Tigeron

- Steep slopes
- Erodible surface
- Hydrophobic surface layer
- Low bearing strength
- Surface compaction hazard

Poin, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop

- Nonsoil material

943F—Tigeron family, stony-Tigeron family, very stony, complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Tigeron, stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges
- saddles

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

Bt1—21 to 38 inches; extremely cobbly loam

Bt2—38 to 60 inches; extremely cobbly clay loam

Tigeron, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges
- saddles

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

Bt1—21 to 38 inches; extremely cobbly loam

Bt2—38 to 60 inches; extremely cobbly clay loam

Additional Components

Cowood, very bouldery and similar soils: 7 percent

Tigeron, extremely gravelly loam, bouldery and similar soils: 3 percent

Management Considerations

Tigeron, stony

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Tigeron, very stony
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Cowood, very bouldery
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Tigeron, extremely gravelly loam, bouldery
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard

944E—Tigeron family, very bouldery-Redfern, bouldery-Rock outcrop complex, 15 to 45 percent slopes, warm

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Tigeron, very bouldery and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges
- saddles

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

Bt1—21 to 38 inches; extremely cobbly loam

Bt2—38 to 60 inches; extremely cobbly clay loam

Redfern, bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Landform:

- divides
- escarpments
- mountain slopes
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- A—0 to 3 inches; very cobbly loam
- E—3 to 7 inches; very cobbly loam
- Bt—7 to 18 inches; very cobbly loam
- R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Additional Components

Tigeron, very stony and similar soils: 5 percent

Warwood, very stony and similar soils: 5 percent

Management Considerations

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Redfern, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Tigeron, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Warwood, very stony

- Low bearing strength
- Surface compaction hazard

945E—Tigeron family, very bouldery-Redfern, bouldery-Rock outcrop complex, 15 to 45 percent slopes, dry

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Tigeron, very bouldery and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges
- saddles

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

Bt1—21 to 38 inches; extremely cobbly loam

Bt2—38 to 60 inches; extremely cobbly clay loam

Redfern, bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Landform:

- divides
- escarpments
- mountain slopes
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

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Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

A—0 to 3 inches; very cobbly loam

E—3 to 7 inches; very cobbly loam

Bt—7 to 18 inches; very cobbly loam

R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Additional Components

Tigeron, greater slopes, very bouldery and similar soils: 7 percent

Libeg, very bouldery and similar soils: 3 percent

Management Considerations

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Redfern, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Tigeron, greater slopes, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Libeg, very bouldery

- Low bearing strength
- Surface compaction hazard

952F—Redfern, bouldery-Rock outcrop-Tigeron family, very bouldery, complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Redfern, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Landform:

- divides
- escarpments
- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

A—0 to 3 inches; very cobbly loam

E—3 to 7 inches; very cobbly loam

Bt—7 to 18 inches; very cobbly loam

R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Tigeron, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges
- saddles

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

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Bt1—21 to 38 inches; extremely cobbly loam
Bt2—38 to 60 inches; extremely cobbly clay loam

Additional Components

Elve, rubbly and similar soils: 4 percent
Cowood, rubbly and similar soils: 2 percent
Libeg, very bouldery and similar soils: 2 percent
Nieman, stony and similar soils: 2 percent

Management Considerations

- Redfern, bouldery
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop, volcanic
- Nonsoil material
- Tigeron, very bouldery
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Elve, rubbly
- Steep slopes
 - Erodible surface
 - Low bearing strength
- Cowood, rubbly
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Libeg, very bouldery
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Nieman, stony
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard

953F—Redfern, rubbly-Rock outcrop-Rubble land association, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500
Mean annual precipitation: 15 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Redfern, rubbly and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Landform:

- divides
- escarpments
- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- A—0 to 3 inches; very stony loam
- E—3 to 7 inches; very cobbly loam
- Bt—7 to 18 inches; very cobbly loam
- R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 20 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Rubble land, volcanic

Composition: 15 percent

Definition: This component consists of extensive areas of hard, fine-grained, angular volcanic cobbles, stones and boulders.

Landform: None assigned

Additional Components

Tigeron, very bouldery and similar soils: 4 percent

Elve, rubbly and similar soils: 3 percent

Helmville, rubbly and similar soils: 3 percent

Management Considerations

Redfern, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve, rubbly

- Steep slopes
- Erodible surface
- Low bearing strength

Helmville, rubbly

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

963E—Elve-Warwood family, complex, 15 to 45 percent slopes, stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,000 to 8,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 60 days

Component Description

Elve, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; gravelly loam

E—6 to 12 inches; very gravelly fine sandy loam

Bw—12 to 29 inches; extremely gravelly fine sandy loam

C—29 to 60 inches; extremely gravelly fine sandy loam

Warwood, stony and similar soils

Composition: 35 percent

Taxonomic class: Fine-loamy, mixed, superactive Eutric Glossocryalfs

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Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountainbase on mountain slopes

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 7.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 7 inches; sandy loam

E/Bt—7 to 25 inches; gravelly sandy clay loam

Bt/E—25 to 37 inches; gravelly sandy clay loam

Bt—37 to 60 inches; very gravelly sandy clay loam

Additional Components

Worock, very bouldery and similar soils: 6 percent

Cowood, very stony and similar soils: 4 percent

Rock outcrop, volcanic: 3 percent

Rubble land, volcanic: 2 percent

Management Considerations

Elve, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Warwood, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock, very bouldery

- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

965E—Elve, very stony-Cowood family, rubbly, complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve, very stony and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very cobbly loam

E—6 to 12 inches; very gravelly loam

Bw—12 to 33 inches; extremely gravelly coarse sandy loam

C—33 to 60 inches; extremely gravelly coarse sandy loam

Cowood, rubbly and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- escarpments
- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 6 inches; very stony loam

Bw—6 to 19 inches; extremely channery loam

R—19 to 60 inches; unweathered bedrock

Additional Components

Rock outcrop, volcanic: 5 percent
Rubble land, volcanic: 5 percent
Worock and similar soils: 5 percent

Management Considerations

Elve, very stony

- Low bearing strength
- Surface compaction hazard

Cowood, rubbly

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Worock

- Low bearing strength
- Surface compaction hazard

965F—Elve, very stony-Cowood family, rubbly-Rock outcrop complex, 35 to 60 percent slopes, dry

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000
Mean annual precipitation: 15 to 24 inches
Frost-free period: 50 to 70 days

Component Description

Elve, very stony and similar soils

Composition: 45 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts
Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/common juniper
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.10 to 3.00 percent stones
Depth to restrictive feature: None noted
Drainage class: Somewhat excessively drained
Parent material: Gravelly colluvium derived from basalt
Flooding: None
Available water capacity to 60-inch depth: Approximately 2.2 inches
Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; very cobbly loam
- E—6 to 12 inches; very gravelly loam

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Bw—12 to 33 inches; extremely gravelly coarse sandy loam

C—33 to 60 inches; extremely gravelly coarse sandy loam

Cowood, rubbly and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Entrocrypts

Landform:

- escarpments
- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 6 inches; very stony loam

Bw—6 to 19 inches; extremely channery loam

R—19 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 8 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 7 percent

Worock, very bouldery and similar soils: 7 percent

Elvick, rubbly and similar soils: 3 percent

Management Considerations

Elve, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Worock, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elvick, rubbly

- High water table
- Low bearing strength
- Surface compaction hazard

966E—Elve, very stony-Rock outcrop-Rubble land complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,500

Mean annual precipitation: 15 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Elve, very stony and similar soils

Composition: 70 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 8 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- subalpine fir/grouse whortleberry
- subalpine fir-whitebark pine/grouse whortleberry

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- O_i—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; very cobbly loam
- E—6 to 12 inches; very gravelly loam
- B_w—12 to 33 inches; extremely gravelly coarse sandy loam
- C—33 to 60 inches; extremely gravelly coarse sandy loam

Rock outcrop, volcanic

Composition: 10 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Rubble land, volcanic

Composition: 10 percent

Definition: This component consists of extensive areas of hard, fine-grained, angular volcanic cobbles, stones and boulders.

Landform: None assigned

Additional Components

Cowood, very stony and similar soils: 4 percent

Elvick, rubbly and similar soils: 3 percent

Worock, very bouldery and similar soils: 3 percent

Management Considerations

Elve, very stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Cowood, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elvick, rubbly

- High water table
- Low bearing strength
- Surface compaction hazard

Worock, very bouldery

- Low bearing strength
- Surface compaction hazard

**968E—Elve, stony-Worock family, complex,
15 to 35 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve, stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

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Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; loam

E—6 to 12 inches; very gravelly fine sandy loam

Bw—12 to 29 inches; extremely gravelly fine sandy loam

C—29 to 60 inches; extremely gravelly fine sandy loam

Worock and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E—3 to 11 inches; loam

E/Bt—11 to 19 inches; very gravelly sandy clay loam

Bt—19 to 38 inches; very gravelly clay loam

BC—38 to 60 inches; very gravelly loam

Additional Components

Cowood, very bouldery and similar soils: 3 percent

Elvick, rubbly and similar soils: 3 percent

Rock outcrop, volcanic: 2 percent

Rubble land, volcanic: 2 percent

Management Considerations

Elve, stony

- Low bearing strength
- Surface compaction hazard

Worock

- Low bearing strength
- Surface compaction hazard

Cowood, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Elvick, rubbly
- High water table
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop, volcanic
- Nonsoil material
- Rubble land, volcanic
- Nonsoil material

968F—Elve, stony-Worock family, complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve, stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; loam
- E—6 to 12 inches; very gravelly fine sandy loam
- Bw—12 to 29 inches; extremely gravelly fine sandy loam
- C—29 to 60 inches; extremely gravelly fine sandy loam

Worock and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

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Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E—3 to 11 inches; loam

E/Bt—11 to 19 inches; very gravelly sandy clay loam

Bt—19 to 38 inches; very gravelly clay loam

BC—38 to 60 inches; very gravelly loam

Additional Components

Cowood, rubbly and similar soils: 4 percent

Rock outcrop, volcanic: 3 percent

Rubble land, volcanic: 3 percent

Management Considerations

Elve, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

982F—Kimpton, very bouldery-Rock outcrop-Tiban, very bouldery, complex, 25 to 50 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Kimpton, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- mountain slopes
- ridges

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.4 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 7 inches; very cobbly loam
- Bt—7 to 14 inches; very cobbly clay loam
- Bk—14 to 33 inches; very cobbly loam
- R—33 to 60 inches; unweathered bedrock

Rock outcrop, sandstone

Composition: 25 percent

Definition: Rock outcrop consist mainly of exposed areas of hard, sedimentary and metamorphic bedrock. Angular cobbles, stones and boulders litter the area and accumulate at the base of hills and escarpments.

Landform: None assigned

Tiban, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountainbase on mountain slopes

Slope: 25 to 50 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- A—0 to 7 inches; very cobbly loam
- Bw1—7 to 14 inches; very gravelly loam
- Bw2—14 to 28 inches; very gravelly loam
- Bk—28 to 60 inches; very gravelly loam

Additional Components

Cheadle, very bouldery and similar soils: 6 percent

Helmville, rubbly and similar soils: 5 percent

Ratiopeak, bouldery and similar soils: 4 percent

Management Considerations

Kimpton, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, sandstone

- Nonsoil material

Tiban, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cheadle, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Helmville, rubbly

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Ratiopeak, bouldery

- Low bearing strength
- Surface compaction hazard

982Fp—Elve-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 7,500

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Elve and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform: Hills

Slope: 35 to 60 percent

Native plant cover type: Forestland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s):

- subalpine fir/twinflower
- subalpine fir/beargrass
- Douglas-fir/twinflower

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Colluvium derived from argillite and/or quartzite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; gravelly loam
- E—7 to 18 inches; very gravelly sandy loam
- Bw—18 to 60 inches; extremely gravelly sandy loam

Rock outcrop

Composition: 35 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: Hills

Additional Components

Lonniebee and similar soils: 4 percent

Tigeron and similar soils: 4 percent

Whitore and similar soils: 4 percent

Evavo and similar soils: 3 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Lonniebee

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tigeron

- Steep slopes
- Erodible surface
- Low bearing strength

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Evavo

- Steep slopes
- Erodible surface
- Hydrophobic surface layer

- Low bearing strength
- Surface compaction hazard

983D—Crow-Bignell complex, 8 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,000

Mean annual precipitation: 18 to 30 inches

Frost-free period: 70 to 90 days

Component Description

Crow and similar soils

Composition: 45 percent

Taxonomic class: Fine, mixed, superactive, frigid Typic Haplustalfs

Landform:

- toeslope on mountains
- footslope on mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- ponderosa pine/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Silt loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- E—2 to 11 inches; silt loam
- Bt/E—11 to 20 inches; silty clay loam
- Bt1—20 to 31 inches; silty clay
- Bt2—31 to 60 inches; silty clay loam

Bignell and similar soils

Composition: 40 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountains

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s):

- ponderosa pine/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; gravelly loam
- E/Bt—9 to 15 inches; very gravelly loam
- Bt—15 to 60 inches; very gravelly clay

Additional Components

Trapps and similar soils: 5 percent
Turrah and similar soils: 5 percent
Yreka and similar soils: 5 percent

Management Considerations

Crow

- Low bearing strength
- Surface compaction hazard

Bignell

- Low bearing strength
- Surface compaction hazard

Trapps

- Low bearing strength
- Surface compaction hazard

Turrah

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

983E—Crow-Bignell complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,600 to 6,000

Mean annual precipitation: 18 to 30 inches

Frost-free period: 70 to 90 days

Component Description

Crow and similar soils

Composition: 45 percent

Taxonomic class: Fine, mixed, superactive, frigid Typic Haplustalfs

Landform:

- footslope on mountains
- backslope on mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- ponderosa pine/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Clayey colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 11 inches; loam

Bt/E—11 to 20 inches; silty clay loam

Bt1—20 to 31 inches; silty clay

Bt2—31 to 60 inches; silty clay loam

Bignell and similar soils

Composition: 40 percent

Taxonomic class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform: Mountains

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s):

- ponderosa pine/Idaho fescue
- Douglas-fir/snowberry-bluebunch wheatgrass phase
- Douglas-fir/pinegrass

Surface layer texture: Gravelly clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from igneous rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

E—1 to 9 inches; gravelly clay loam

E/Bt—9 to 15 inches; very gravelly loam

Bt—15 to 60 inches; very gravelly clay

Additional Components

Rock outcrop: 4 percent

Typic Haplustalfs and similar soils: 4 percent

Yreka and similar soils: 4 percent

Trapps and similar soils: 3 percent

Management Considerations

Crow

- Low bearing strength
- Surface compaction hazard

Bignell

- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Typic Haplustalfs

- Low bearing strength
- Surface compaction hazard

Yreka

- Low bearing strength
- Surface compaction hazard

Trapps

- Low bearing strength
- Surface compaction hazard

988F—Whitecow-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,200

Mean annual precipitation: 18 to 25 inches

Frost-free period: 70 to 90 days

Component Description

Whitecow and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcustepts

Landform: Mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/snowberry

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.5 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; gravelly loam

Bk1—6 to 35 inches; very gravelly loam

Bk2—35 to 60 inches; extremely cobbly loam

Rock outcrop

Composition: 30 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: Mountains

Additional Components

Moderately Deep Soils and similar soils: 4 percent

Whitecow, greater slopes and similar soils: 4 percent

Yreka and similar soils: 4 percent

Wildgen and similar soils: 3 percent

Management Considerations

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Moderately Deep Soils

- Onsite required

Whitecow, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Yreka

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Wildgen

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

992F—Whitore-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,800 to 7,500

Mean annual precipitation: 20 to 40 inches

Frost-free period: 30 to 70 days

Component Description

Whitore and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, carbonatic Typic Eutrocryepts

Landform:

- shoulder on mountains
- backslope on mountains

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Colluvium derived from limestone

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

O_i—0 to 2 inches; slightly decomposed plant material

A—2 to 10 inches; gravelly loam

B_w—10 to 16 inches; very gravelly clay loam

B_k—16 to 60 inches; very gravelly loam

Rock outcrop

Composition: 40 percent

Landform: None assigned

Additional Components

Helmville and similar soils: 4 percent
Typic Eutrocryepts and similar soils: 4 percent
Whitecow and similar soils: 4 percent
Elve and similar soils: 3 percent

Management Considerations

Whitore

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop

- Nonsoil material

Helmville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Typic Eutrocryepts

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Whitecow

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve

- Low bearing strength

996D—Libeg-Monaberg complex, 2 to 15 percent slopes, bouldery

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Libeg, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Soil Survey of Deerlodge National Forest Area, Montana

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 10 inches; gravelly loam

Bt1—10 to 17 inches; very gravelly clay loam

Bt2—17 to 31 inches; very cobbly loam

Bt3—31 to 60 inches; extremely cobbly sandy loam

Monaberg, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from fine-grained igneous and metamorphic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.7 inches

Typical profile:

A—0 to 11 inches; gravelly loam

Bt—11 to 48 inches; gravelly clay loam

BC—48 to 60 inches; gravelly loam

Additional Components

Sebud, bouldery and similar soils: 5 percent

Marcel, bouldery and similar soils: 4 percent

Nieman, very stony and similar soils: 3 percent

Tibkey, bouldery and similar soils: 3 percent

Management Considerations

Libeg, bouldery

- Low bearing strength
- Surface compaction hazard

Monaberg, bouldery

- Low bearing strength
- Surface compaction hazard

Sebud, bouldery

- Low bearing strength
- Surface compaction hazard

Marcel, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Nieman, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

**997E—Libeg, stony-Monaberg-Adel complex,
15 to 35 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Libeg, stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

A—0 to 10 inches; loam

Bt1—10 to 17 inches; very gravelly clay loam

Bt2—17 to 31 inches; very gravelly sandy clay loam

Bt3—31 to 60 inches; extremely cobbly sandy loam

Monaberg and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from fine-grained igneous and metamorphic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.9 inches

Typical profile:

A—0 to 11 inches; loam

Bt—11 to 48 inches; gravelly clay loam

BC—48 to 60 inches; gravelly loam

Adel and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive Pachic Haplocryolls

Landform:

- fans
- mountainsides

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.7 inches

Typical profile:

A—0 to 9 inches; loam

Bw—9 to 32 inches; loam

C—32 to 60 inches; gravelly loam

Additional Components

Adel, lesser slopes and similar soils: 5 percent

Arrowpeak, very stony and similar soils: 5 percent

Libeg, very bouldery and similar soils: 5 percent

Management Considerations

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Monaberg

- Low bearing strength
- Surface compaction hazard

Adel

- Low bearing strength
- Surface compaction hazard

Adel, lesser slopes

- Low bearing strength
- Surface compaction hazard

Arrowpeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1003E—Tiban, bouldery-Cheadle, very bouldery, complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Tiban, bouldery and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountainbase on mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.1 inches

Typical profile:

- A—0 to 7 inches; gravelly loam
- Bw1—7 to 14 inches; very gravelly loam
- Bw2—14 to 28 inches; very gravelly loam
- Bk—28 to 60 inches; very gravelly loam

Cheadle, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- escarpments
- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.6 inches

Typical profile:

A—0 to 4 inches; very gravelly loam

Bw—4 to 15 inches; very gravelly loam

Bk—15 to 18 inches; extremely gravelly loam

R—18 to 60 inches; unweathered bedrock

Additional Components

Ratiopeak, bouldery and similar soils: 6 percent

Kimpton, very bouldery and similar soils: 4 percent

Surdal, stony and similar soils: 4 percent

Tibkey, bouldery and similar soils: 4 percent

Rock outcrop, volcanic: 2 percent

Management Considerations

Tiban, bouldery

- Low bearing strength
- Surface compaction hazard

Cheadle, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Ratiopeak, bouldery

- Low bearing strength
- Surface compaction hazard

Kimpton, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

1242D—Baxton-Connieo, very bouldery-Rock outcrop complex, 4 to 15 percent slopes, moist

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Baxton and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 11 inches; coarse sandy loam
- Bw1—11 to 22 inches; gravelly coarse sandy loam
- Bw2—22 to 31 inches; gravelly coarse sandy loam
- Cr—31 to 57 inches; weathered bedrock
- R—57 to 60 inches; unweathered bedrock

Connieo, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam

Soil Survey of Deerlodge National Forest Area, Montana

Cr—14 to 18 inches; weathered bedrock
R—18 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Clancy and similar soils: 5 percent
Burtoner, bouldery and similar soils: 4 percent
Breeton and similar soils: 3 percent
Elmark, very bouldery and similar soils: 3 percent

Management Considerations

Baxton

- None

Connieo, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Clancy

- Low bearing strength
- Surface compaction hazard

Burtoner, bouldery

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

Elmark, very bouldery

- Low bearing strength
- Surface compaction hazard

1242E—Baxton-Connieo, very bouldery-Rock outcrop complex, 15 to 35 percent slopes, moist

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Baxton and similar soils

Composition: 50 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

A—0 to 11 inches; coarse sandy loam

Bw1—11 to 22 inches; gravelly coarse sandy loam

Bw2—22 to 31 inches; gravelly coarse sandy loam

Cr—31 to 57 inches; weathered bedrock

R—57 to 60 inches; unweathered bedrock

Connieo, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 8 inches; coarse sandy loam

Bt—8 to 14 inches; gravelly sandy clay loam

Cr—14 to 18 inches; weathered bedrock

R—18 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Catgulch, bouldery and similar soils: 5 percent
Elmark, very bouldery and similar soils: 4 percent
Breeton and similar soils: 3 percent
Burtoner and similar soils: 3 percent

Management Considerations

Baxton

- None

Connieo, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Catgulch, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Elmark, very bouldery

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

Burtoner

- Low bearing strength
- Surface compaction hazard

1243D—Baxton-Connieo complex, 4 to 15 percent slopes, bouldery

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Baxton, bouldery and similar soils

Composition: 55 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 11 inches; coarse sandy loam
- Bw1—11 to 22 inches; gravelly coarse sandy loam
- Bw2—22 to 31 inches; gravelly coarse sandy loam
- Cr—31 to 57 inches; weathered bedrock
- R—57 to 60 inches; unweathered bedrock

Connieo, bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; weathered bedrock
- R—18 to 22 inches; unweathered bedrock

Additional Components

Baxton, greater slopes and similar soils: 6 percent

Breeton and similar soils: 4 percent

Rock outcrop, granite: 3 percent

Ashbray, bouldery and similar soils: 2 percent

Management Considerations

Baxton, bouldery

- None

Connieo, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

- Baxton, greater slopes
 - Low bearing strength
- Breeton
 - Low bearing strength
- Rock outcrop, granite
 - Nonsoil material
- Ashbray, bouldery
 - Shallow soil
 - Low bearing strength

1244E—Baxton-Connieo-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Baxton and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 11 inches; sandy loam
- Bw1—11 to 22 inches; gravelly coarse sandy loam
- Bw2—22 to 31 inches; gravelly coarse sandy loam
- Cr—31 to 57 inches; weathered bedrock
- R—57 to 60 inches; unweathered bedrock

Connieo and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; weathered bedrock
- R—18 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Breeton and similar soils: 3 percent

Catgulch, stony and similar soils: 3 percent

Ashbray, stony and similar soils: 2 percent

Burtoner, bouldery and similar soils: 2 percent

Management Considerations

Baxton

- None

Connieo

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Breeton

- Low bearing strength

Catgulch, stony

- Shallow soil

Ashbray, stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Burtoner, bouldery

- Low bearing strength
- Surface compaction hazard

1361E—Lumpgulch, bouldery-Rock outcrop-Elmark, bouldery, complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Lumpgulch, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- ridges

Slope: 8 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly sandy clay loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 23 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 8 inches; gravelly sandy clay loam

Bt—8 to 23 inches; gravelly sandy clay loam

Cr—23 to 28 inches; weathered bedrock

R—28 to 60 inches; unweathered bedrock

Elmark, bouldery and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- mountainsides
- ridges

Slope: 8 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 9 inches; sandy loam

Bt—9 to 21 inches; sandy clay loam

BC—21 to 32 inches; gravelly sandy loam

Cr—32 to 59 inches; weathered bedrock

R—59 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Shaboom, extremely bouldery and similar soils: 6 percent

Kellygulch, very bouldery and similar soils: 5 percent

Connieo, very bouldery and similar soils: 4 percent

Management Considerations

Lumpgulch, bouldery

- Low bearing strength
- Surface compaction hazard

Elmark, bouldery

- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Kellygulch, very bouldery

- Steep slopes
- Erodible surface

Connieo, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

1373E—Burtoner-Elmark-Connieo complex, 8 to 25 percent slopes, very bouldery

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Burtoner, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy clay loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- A—0 to 8 inches; sandy clay loam
- Bt—8 to 23 inches; sandy clay loam
- Cr—23 to 28 inches; weathered bedrock
- R—28 to 60 inches; unweathered bedrock

Elmark, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- mountainsides
- ridges

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Fine-loamy slope alluvium over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.5 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 9 inches; gravelly coarse sandy loam

Bt—9 to 21 inches; gravelly sandy clay loam

BC—21 to 32 inches; gravelly sandy loam

Cr—32 to 59 inches; weathered bedrock

R—59 to 60 inches; unweathered bedrock

Connieo, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 8 to 15 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 8 inches; coarse sandy loam

Bt—8 to 14 inches; gravelly sandy clay loam

Cr—14 to 18 inches; weathered bedrock

R—18 to 60 inches; unweathered bedrock

Additional Components

Shaboom, bouldery and similar soils: 5 percent

Rock outcrop, granite: 4 percent

Ashbray, bouldery and similar soils: 2 percent

Baxton and similar soils: 2 percent

Tolbert, bouldery and similar soils: 2 percent

Management Considerations

Burtoner, very bouldery

- Low bearing strength
- Surface compaction hazard

Elmark, very bouldery

- Low bearing strength
- Surface compaction hazard

Connieo, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Shaboom, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Ashbray, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Baxton

- None

Tolbert, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

1540F—Shaboom, extremely bouldery-Rock outcrop-Elmark, very bouldery, association, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shaboom, extremely bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Soil Survey of Deerlodge National Forest Area, Montana

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; sandy loam
- Bw—4 to 13 inches; very gravelly coarse sandy loam
- R—13 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 30 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Elmark, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 9 inches; coarse sandy loam
- Bt—9 to 21 inches; sandy clay loam
- BC—21 to 32 inches; gravelly sandy loam
- Cr—32 to 59 inches; weathered bedrock
- R—59 to 60 inches; unweathered bedrock

Additional Components

Ashbray, rubbly and similar soils: 6 percent

Lumpgulch, very bouldery and similar soils: 5 percent

Kellygulch, bouldery and similar soils: 4 percent

Management Considerations

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Rock outcrop, granite
- Nonsoil material
- Elmark, very bouldery
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Ashbray, rubbly
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
- Lumpgulch, very bouldery
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Kellygulch, bouldery
- Steep slopes
 - Erodible surface

1541E—Shaboom, bouldery-Lumpgulch, very bouldery-Rock outcrop complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shaboom, bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 8 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; gravelly sandy loam
- Bw—4 to 13 inches; very gravelly coarse sandy loam
- R—13 to 60 inches; unweathered bedrock

Lumpgulch, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- ridges

Slope: 8 to 25 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 23 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 8 inches; gravelly coarse sandy loam
- Bt—8 to 23 inches; gravelly sandy clay loam
- Cr—23 to 28 inches; weathered bedrock
- R—28 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Elmark, bouldery and similar soils: 4 percent

Ashbray, bouldery and similar soils: 3 percent

Kellygulch, very bouldery and similar soils: 3 percent

Management Considerations

Shaboom, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Lumpgulch, very bouldery

- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Elmark, bouldery

- Low bearing strength
- Surface compaction hazard

Ashbray, bouldery

- Shallow soil
- Low bearing strength

Kellygulch, very bouldery

- None

1543E—Shaboom, very bouldery-Kellygulch, very bouldery-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shaboom, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; coarse sandy loam

Bw—4 to 13 inches; very gravelly coarse sandy loam

R—13 to 60 inches; unweathered bedrock

Kellygulch, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Coarse-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; coarse sandy loam
- Bw—7 to 29 inches; gravelly coarse sandy loam
- Cr—29 to 33 inches; weathered bedrock
- R—33 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Ashbray, bouldery and similar soils: 6 percent

Elmark, very bouldery and similar soils: 5 percent

Breeton and similar soils: 4 percent

Management Considerations

Shaboom, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Kellygulch, very bouldery

- None

Rock outcrop, granite

- Nonsoil material

Ashbray, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Elmark, very bouldery

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

**1543F—Shaboom, extremely bouldery-Kellygulch,
extremely bouldery-Rock outcrop complex,
35 to 60 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shaboom, extremely bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- side slope on hillsides
- head slope on hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; coarse sandy loam
- Bw—4 to 13 inches; very gravelly coarse sandy loam
- R—13 to 60 inches; unweathered bedrock

Kellygulch, extremely bouldery and similar soils

Composition: 30 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Coarse-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; coarse sandy loam
- Bw—7 to 29 inches; gravelly coarse sandy loam
- Cr—29 to 33 inches; weathered bedrock
- R—33 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Ashbray, rubbly and similar soils: 6 percent

Elmark, very bouldery and similar soils: 4 percent

Management Considerations

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Kellygulch, extremely bouldery

- Steep slopes
- Erodible surface

Rock outcrop, granite

- Nonsoil material

Ashbray, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Elmark, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1564E—Hilger, very stony-Hilger, rubbly-Rock outcrop complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Hilger, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.2 inches

Typical profile:

A—0 to 8 inches; very cobbly loam

Bt—8 to 14 inches; very cobbly clay loam

Bk1—14 to 24 inches; very cobbly loam

Bk2—24 to 60 inches; extremely stony loam

Hilger, rubbly and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

A—0 to 5 inches; stony loam

Bt—5 to 13 inches; very stony clay loam

Bk1—13 to 46 inches; extremely stony loam

Bk2—46 to 60 inches; extremely stony loam

Rock outcrop, volcanic

Composition: 8 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 7 percent

Martinsdale, stony and similar soils: 5 percent

Shawmut, stony and similar soils: 5 percent

Wickes, stony and similar soils: 5 percent

Brickner, very bouldery and similar soils: 4 percent

Tolbert, bouldery and similar soils: 4 percent

Gnojek, stony and similar soils: 2 percent

Management Considerations

Hilger, very stony

- Low bearing strength
- Surface compaction hazard

Hilger, rubbly

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Martinsdale, stony

- Low bearing strength
- Surface compaction hazard

Shawmut, stony

- Low bearing strength
- Surface compaction hazard

Wickes, stony

- Low bearing strength
- Surface compaction hazard

Brickner, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tolbert, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Gnojek, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

1591E—Catgulch, bouldery-Crackerville-Rock outcrop complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Catgulch, bouldery and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- A—0 to 5 inches; gravelly sandy clay loam
- Bw—5 to 12 inches; very gravelly sandy clay loam
- Cr—12 to 15 inches; weathered bedrock
- R—15 to 60 inches; unweathered bedrock

Crackerville and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy clay loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Gravelly slope alluvium derived from granite over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.3 inches

Typical profile:

A—0 to 7 inches; gravelly sandy clay loam

Bt—7 to 15 inches; very gravelly sandy clay loam

BC—15 to 23 inches; gravelly coarse sandy loam

Cr—23 to 31 inches; weathered bedrock

R—31 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Baxton and similar soils: 2 percent

Breeton and similar soils: 2 percent

Burtoner, very stony and similar soils: 2 percent

Connieo, very bouldery and similar soils: 2 percent

Elmark, very bouldery and similar soils: 2 percent

Management Considerations

Catgulch, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Crackerville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Baxton

- None

Breeton

- Low bearing strength

Burtoner, very stony

- Low bearing strength
- Surface compaction hazard

Connieo, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Elmark, very bouldery

- Low bearing strength
- Surface compaction hazard

1602C—Farnuf-Placerton complex, 2 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Farnuf and similar soils

Composition: 45 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- base slope on hillsides
- tread on terraces

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy alluvium derived from sandstone-shale

Flooding: None

Available water capacity to 60-inch depth: Approximately 9.9 inches

Typical profile:

A—0 to 7 inches; sandy clay loam

Bt—7 to 14 inches; sandy clay loam

Bk—14 to 32 inches; gravelly coarse sandy loam

BC—32 to 60 inches; gravelly coarse sandy loam

Placerton and similar soils

Composition: 45 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform:

- divides
- hillsides
- mountainbase on mountain slopes
- ridges

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy clay loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.3 inches

Typical profile:

A—0 to 7 inches; sandy clay loam

Bt—7 to 21 inches; gravelly clay loam

Bk—21 to 29 inches; gravelly sandy loam
Cr—29 to 58 inches; weathered bedrock
R—58 to 60 inches; unweathered bedrock

Additional Components

Kounter, bouldery and similar soils: 4 percent
Connieo and similar soils: 3 percent
Martinsdale and similar soils: 3 percent

Management Considerations

Farnuf

- Low bearing strength
- Surface compaction hazard

Placerton

- Low bearing strength
- Surface compaction hazard

Kounter, bouldery

- Shallow soil

Connieo

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Martinsdale

- Low bearing strength
- Surface compaction hazard

1624F—Connieo, very stony-Baxton, bouldery-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Connieo, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; weathered bedrock
- R—18 to 60 inches; unweathered bedrock

Baxton, bouldery and similar soils

Composition: 30 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 11 inches; coarse sandy loam
- Bw1—11 to 22 inches; gravelly coarse sandy loam
- Bw2—22 to 31 inches; gravelly coarse sandy loam
- Cr—31 to 57 inches; weathered bedrock
- R—57 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Ashbray, rubbly and similar soils: 6 percent

Breeton and similar soils: 4 percent

Jeffcity, stony and similar soils: 3 percent

Kellygulch, extremely bouldery and similar soils: 2 percent

Management Considerations

Connieo, very stony

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Baxton, bouldery
- Steep slopes
 - Erodible surface
- Rock outcrop, granite
- Nonsoil material
- Ashbray, rubbly
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
- Breeton
- Low bearing strength
- Jeffcity, stony
- Low bearing strength
 - Surface compaction hazard
- Kellygulch, extremely bouldery
- Steep slopes
 - Erodible surface

1626D—Connieo, bouldery-Burtoner, bouldery-Rock outcrop complex, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Connieo, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam

Soil Survey of Deerlodge National Forest Area, Montana

Cr—14 to 18 inches; weathered bedrock
R—18 to 60 inches; unweathered bedrock

Burtoner, bouldery and similar soils

Composition: 25 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 23 inches; sandy clay loam
- Cr—23 to 28 inches; weathered bedrock
- R—28 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Ashbray, bouldery and similar soils: 4 percent

Baxton, bouldery and similar soils: 4 percent

Bielenberg and similar soils: 4 percent

Breeton and similar soils: 3 percent

Management Considerations

Connieo, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Burtoner, bouldery

- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Ashbray, bouldery

- Shallow soil
- Low bearing strength

Baxton, bouldery

- None

Bielenberg

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

1628D—Connieo, bouldery-Ashbray, very bouldery-Rock outcrop complex, 2 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Connieo, bouldery and similar soils

Composition: 50 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; bedrock
- R—18 to 60 inches; bedrock

Ashbray, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid, frigid Lithic Ustorthents

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 2 to 15 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 4 inches; gravelly coarse sandy loam
- C—4 to 14 inches; very gravelly coarse sandy loam
- Cr—14 to 17 inches; bedrock
- R—17 to 60 inches; bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock.

Landform: None assigned

Additional Components

Rubble land, granite: 10 percent

Catgulch, stony and similar soils: 4 percent

Breeton and similar soils: 3 percent

Jeffcity, stony and similar soils: 3 percent

Management Considerations

Connieo, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Ashbray, very bouldery

- Shallow soil

Rock outcrop, granite

- Nonsoil material

Rubble land, granite

- Nonsoil material

Catgulch, stony

- Shallow soil

Breeton

- Low bearing strength

Jeffcity, stony

- Low bearing strength
- Surface compaction hazard

1629C—Connieo-Catgulch-Rock outcrop complex, 2 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Connieo and similar soils

Composition: 40 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 8 inches; coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; bedrock
- R—18 to 60 inches; bedrock

Catgulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- A—0 to 4 inches; gravelly coarse sandy loam
- Bw—4 to 12 inches; very gravelly sandy clay loam

Soil Survey of Deerlodge National Forest Area, Montana

Cr—12 to 15 inches; bedrock

R—15 to 60 inches; bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Bielenberg and similar soils: 2 percent

Breeton and similar soils: 2 percent

Burtoner and similar soils: 2 percent

Clancy, very stony and similar soils: 2 percent

Crackerville, stony and similar soils: 2 percent

Management Considerations

Connieo

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Catgulch

- Shallow soil

Rock outcrop, granite

- Nonsoil material

Bielenberg

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

Burtoner

- Low bearing strength
- Surface compaction hazard

Clancy, very stony

- Low bearing strength
- Surface compaction hazard

Crackerville, stony

- Low bearing strength
- Surface compaction hazard

1641E—Nieman, very stony-Rock outcrop-Libeg, bouldery, complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Nieman, very stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- escarpments
- mountaintop on mountain slopes
- mountainflank on mountain slopes
- ridges

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

- A—0 to 4 inches; very cobbly loam
- Bt—4 to 13 inches; very cobbly loam
- R—13 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Libeg, bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.4 inches

Typical profile:

- A—0 to 10 inches; very gravelly loam
- Bt1—10 to 17 inches; very gravelly clay loam
- Bt2—17 to 31 inches; very gravelly sandy clay loam
- Bt3—31 to 60 inches; extremely cobbly sandy loam

Additional Components

Redfern and similar soils: 3 percent

Tigeron, very bouldery and similar soils: 2 percent

Management Considerations

Nieman, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Libeg, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Redfern

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1642F—Nieman, bouldery-Rock outcrop-Libeg, very bouldery, complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Nieman, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- escarpments
- mountaintop on mountain slopes
- mountainflank on mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Gravelly residuum weathered from basalt
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.4 inches
Typical profile:
A—0 to 4 inches; very cobbly loam
Bt—4 to 13 inches; very cobbly loam
R—13 to 60 inches; unweathered bedrock

Libeg, very bouldery and similar soils

Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls
Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 25 to 60 percent
Native plant cover type: Forestland
Habitat type(s): Douglas-fir/rough fescue
Surface layer texture: Very cobbly loam
Rock fragments on the soil surface: 0.10 to 3.00 percent boulders
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly till, unspecified
Flooding: None
Available water capacity to 60-inch depth: Approximately 4.4 inches
Typical profile:
A—0 to 10 inches; very cobbly loam
Bt1—10 to 17 inches; very gravelly clay loam
Bt2—17 to 31 inches; very gravelly sandy clay loam
Bt3—31 to 60 inches; extremely cobbly sandy loam

Rock outcrop, volcanic

Composition: 25 percent
Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.
Landform: None assigned

Additional Components

Tigeron, bouldery and similar soils: 4 percent
Redfern and similar soils: 3 percent
Surdal, stony and similar soils: 3 percent

Management Considerations

Nieman, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Tigeron, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Redfern

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1643E—Nieman, stony-Libeg complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Nieman, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Landform:

- escarpments
- mountainflank on mountain slopes
- mountaintop on mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- A—0 to 4 inches; cobbly loam
- Bt—4 to 13 inches; very cobbly loam
- R—13 to 60 inches; unweathered bedrock

Libeg and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

- A—0 to 10 inches; gravelly loam
- Bt1—10 to 17 inches; very gravelly clay loam
- Bt2—17 to 31 inches; very cobbly loam
- Bt3—31 to 60 inches; extremely cobbly sandy loam

Additional Components

Rock outcrop, volcanic: 4 percent

Arrowpeak, stony and similar soils: 3 percent

Surdal, stony and similar soils: 3 percent

Management Considerations

Nieman, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Arrowpeak, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

1652E—Sawicki-Clasoil complex, 8 to 35 percent slopes, bouldery

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Sawicki, bouldery and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- mountainbase on mountain slopes

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- A—0 to 8 inches; very cobbly loam
- Bt—8 to 14 inches; very cobbly clay loam
- BC—14 to 51 inches; very cobbly loam
- C—51 to 60 inches; extremely cobbly loam

Clasoil, bouldery and similar soils

Composition: 30 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- base slope on hillsides

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy alluvium derived from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 8.0 inches

Typical profile:

- A—0 to 13 inches; gravelly loam
- Bt—13 to 34 inches; gravelly sandy clay loam
- BC—34 to 60 inches; cobbly sandy loam

Additional Components

Blaincreek, stony and similar soils: 5 percent
Tolbert, very stony and similar soils: 4 percent
Mocmont, stony and similar soils: 3 percent
Rock outcrop, volcanic: 3 percent

Management Considerations

Sawicki, bouldery

- Low bearing strength
- Surface compaction hazard

Clasoil, bouldery

- Low bearing strength
- Surface compaction hazard

Blaincreek, stony

- Low bearing strength
- Surface compaction hazard

Tolbert, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Mocmont, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

1661D—Catgulch-Baxton complex, 2 to 15 percent slopes, stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Catgulch, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Soil Survey of Deerlodge National Forest Area, Montana

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- A—0 to 4 inches; gravelly sandy loam
- Bw—4 to 12 inches; very gravelly sandy clay loam
- Cr—12 to 15 inches; weathered bedrock
- R—15 to 60 inches; unweathered bedrock

Baxton, stony and similar soils

Composition: 35 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Landform:

- hillsides
- mountainsides
- ridges

Slope: 2 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Somewhat excessively drained

Parent material: Coarse-loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.2 inches

Typical profile:

- A—0 to 11 inches; sandy loam
- Bw1—11 to 22 inches; gravelly coarse sandy loam
- Bw2—22 to 31 inches; gravelly coarse sandy loam
- Cr—31 to 57 inches; weathered bedrock
- R—57 to 60 inches; unweathered bedrock

Additional Components

Burtoner, bouldery and similar soils: 5 percent

Bielenberg and similar soils: 4 percent

Breeton and similar soils: 3 percent

Farnuf and similar soils: 3 percent

Management Considerations

Catgulch, stony

- Shallow soil

Baxton, stony

- None

Burtoner, bouldery

- Low bearing strength
- Surface compaction hazard

Bielenberg

- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

Farnuf

- Low bearing strength
- Surface compaction hazard

1664E—Catgulch, bouldery-Rock outcrop-Ashbray, bouldery, complex, 4 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Catgulch, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Slope: 4 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

A—0 to 4 inches; coarse sandy loam

Bw—4 to 12 inches; very gravelly coarse sandy loam

Cr—12 to 15 inches; weathered bedrock

R—15 to 60 inches; unweathered bedrock

Ashbray, bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid, frigid Lithic Ustorthents

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 4 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 4 inches; gravelly coarse sandy loam
- C—4 to 14 inches; very gravelly coarse sandy loam
- Cr—14 to 17 inches; weathered bedrock
- R—17 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Connieo, very bouldery and similar soils: 3 percent

Shaboom, bouldery and similar soils: 3 percent

Baxton and similar soils: 2 percent

Connieo, bouldery and similar soils: 2 percent

Management Considerations

Catgulch, bouldery

- Shallow soil

Ashbray, bouldery

- Shallow soil
- Low bearing strength

Rock outcrop, granite

- Nonsoil material

Connieo, very bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Shaboom, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Baxton

- None

Connieo, bouldery

- Shallow soil
- Low bearing strength
- Surface compaction hazard

1675E—Tolbert, very stony-Blaincreek, stony-Rock outcrop complex, 8 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Tolbert, very stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- interfluves
- ridges

Slope: 8 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone and/or basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 7 inches; very cobbly loam
- Bt—7 to 12 inches; very cobbly clay loam
- R—12 to 60 inches; unweathered bedrock

Blaincreek, stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 15 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: Lithic bedrock: 20 to 40 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

A—0 to 7 inches; gravelly loam

Bt—7 to 13 inches; very gravelly clay loam

BC—13 to 25 inches; very cobbly loam

R—25 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Additional Components

Sawicki, very stony and similar soils: 6 percent

Gnojek, stony and similar soils: 5 percent

Wickes, stony and similar soils: 4 percent

Management Considerations

Tolbert, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Blaincreek, stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Sawicki, very stony

- Low bearing strength
- Surface compaction hazard

Gnojek, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Wickes, stony

- Low bearing strength
- Surface compaction hazard

1732F—Tepecreek, very bouldery-Caseypeak, very bouldery-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,000

Mean annual precipitation: 15 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Tepecreek, very bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- escarpments
- mountain slopes
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir-whitebark pine/grouse whortleberry

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.7 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; cobbly coarse sandy loam
- Bt—9 to 19 inches; very gravelly sandy clay loam
- BC—19 to 36 inches; very gravelly sandy loam
- Cr—36 to 53 inches; weathered bedrock
- R—53 to 60 inches; unweathered bedrock

Caseypeak, very bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir-whitebark pine/grouse whortleberry

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; very cobbly coarse sandy loam

Soil Survey of Deerlodge National Forest Area, Montana

Bw—6 to 17 inches; very gravelly coarse sandy loam

Cr—17 to 20 inches; weathered bedrock

R—20 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock.

Landform: None assigned

Additional Components

Rubble land, granite: 10 percent

Bobowic, very bouldery and similar soils: 6 percent

Rubick, stony and similar soils: 5 percent

Kurrie, stony and similar soils: 4 percent

Management Considerations

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Caseypeak, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop, granite

- Nonsoil material

Rubble land, granite

- Nonsoil material

Bobowic, very bouldery

- None

Rubick, stony

- Steep slopes
- Erodible surface

Kurrie, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1734F—Hiore, stony-Kurrie, stony-Caseypeak, very stony, complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Hiore, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A1—1 to 3 inches; coarse sandy loam
- A2—3 to 8 inches; gravelly coarse sandy loam
- Bw—8 to 36 inches; very gravelly loamy coarse sand
- BC—36 to 60 inches; very gravelly loamy coarse sand

Kurrie, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-pinegrass phase

Surface layer texture: Cobbly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 40 to 58 inches
- lithic bedrock: 43 to 60 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 6 inches; cobbly coarse sandy loam
- E/Bt—6 to 25 inches; very cobbly sandy loam
- Bt—25 to 43 inches; very cobbly sandy clay loam
- BC—43 to 48 inches; very gravelly sandy loam
- Cr—48 to 55 inches; weathered bedrock
- R—55 to 60 inches; unweathered bedrock

Caseypeak, very stony and similar soils

Composition: 10 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Entrocrypts

Landform:

- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; very cobbly coarse sandy loam
- Bw—6 to 17 inches; very gravelly coarse sandy loam
- Cr—17 to 20 inches; weathered bedrock
- R—20 to 60 inches; unweathered bedrock

Additional Components

Hiore, lesser slopes, stony and similar soils: 6 percent

Hiore, cool and similar soils: 5 percent

Rock outcrop, volcanic: 4 percent

Management Considerations

Hiore, stony

- Steep slopes
- Erodible surface

Kurrie, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Caseypeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Hiore, lesser slopes, stony

- None

Hiore, cool

- Steep slopes
- Erodible surface

Rock outcrop, volcanic

- Nonsoil material

1823F—Kellygulch, stony-Shaboom, very bouldery-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Kellygulch, stony and similar soils

Composition: 60 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Coarse-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 7 inches; sandy loam

Bw—7 to 29 inches; gravelly coarse sandy loam

Cr—29 to 33 inches; weathered bedrock

R—33 to 60 inches; unweathered bedrock

Shaboom, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- side slope on hillsides
- head slope on hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

O_i—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; coarse sandy loam

B_w—4 to 13 inches; very gravelly coarse sandy loam

R—13 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Baxton, bouldery and similar soils: 5 percent

Kellygulch, lesser slopes, bouldery and similar soils: 5 percent

Management Considerations

Kellygulch, stony

- Steep slopes
- Erodible surface

Shaboom, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Baxton, bouldery

- None

Kellygulch, lesser slopes, bouldery

- None

1842E—Caseypeak-Branham-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Caseypeak and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocryepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.4 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; sandy loam

Bw—6 to 17 inches; very gravelly coarse sandy loam

Cr—17 to 20 inches; weathered bedrock

R—20 to 60 inches; unweathered bedrock

Branham and similar soils

Composition: 30 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 36 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

A—0 to 8 inches; sandy loam

Bw—8 to 16 inches; gravelly coarse sandy loam

BC—16 to 30 inches; gravelly loamy coarse sand

Cr—30 to 36 inches; weathered bedrock

R—36 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Bobowic and similar soils: 5 percent
Clugulch and similar soils: 4 percent
Tepecreek, stony and similar soils: 3 percent
Branham, moist and similar soils: 2 percent
Lowder and similar soils: 1 percent

Management Considerations

Caseypeak

- Shallow soil
- Low bearing strength

Branham

- None

Rock outcrop, granite

- Nonsoil material

Bobowic

- None

Clugulch

- Shallow soil

Tepecreek, stony

- Low bearing strength
- Surface compaction hazard

Branham, moist

- Low bearing strength
- Surface compaction hazard

Lowder

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

1853E—Branham-Tuggle complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Branham and similar soils

Composition: 60 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Soil Survey of Deerlodge National Forest Area, Montana

Depth to restrictive feature:

- paralithic bedrock: 20 to 36 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly colluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.4 inches

Typical profile:

- A—0 to 8 inches; loam
- Bw—8 to 16 inches; gravelly coarse sandy loam
- BC—16 to 30 inches; gravelly loamy coarse sand
- Cr—30 to 36 inches; weathered bedrock
- R—36 to 60 inches; unweathered bedrock

Tuggle and similar soils

Composition: 25 percent

Taxonomic class: Loamy, mixed, superactive Lithic Haplocryolls

Landform:

- escarpments
- mountainflank on mountain slopes
- mountaintop on mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Coarse sandy loam

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 7 inches; coarse sandy loam
- Bw—7 to 15 inches; gravelly coarse sandy loam
- Cr—15 to 18 inches; weathered bedrock
- R—18 to 60 inches; unweathered bedrock

Additional Components

Opitz, bouldery and similar soils: 5 percent

Hiore and similar soils: 4 percent

Branham, moist and similar soils: 3 percent

Clugulch and similar soils: 3 percent

Management Considerations

Branham

- Low bearing strength

Tuggle

- Shallow soil

Opitz, bouldery

- Low bearing strength

Hiore

- None

Branham, moist

- Low bearing strength
- Surface compaction hazard

Clugulch

- Shallow soil

1861F—Clugulch-Bobowic-Rock outcrop complex, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 40 to 95 days

Component Description

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; sandy loam
- Bw—5 to 9 inches; gravelly sandy loam
- R—9 to 60 inches; unweathered bedrock

Bobowic and similar soils

Composition: 25 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocryepts

Landform:

- mountain slopes
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

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Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 12 inches; sandy loam
- Bw—12 to 22 inches; gravelly coarse sandy loam
- Cr—22 to 35 inches; weathered bedrock
- R—35 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 25 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Caseypeak, very stony and similar soils: 6 percent

Elmark, bouldery and similar soils: 5 percent

Lumpgulch, bouldery and similar soils: 5 percent

Hiore and similar soils: 4 percent

Management Considerations

Clugulch

- Steep slopes
- Erodible surface
- Shallow soil

Bobowic

- Steep slopes
- Erodible surface

Rock outcrop, granite

- Nonsoil material

Caseypeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Elmark, bouldery

- Low bearing strength
- Surface compaction hazard

Lumpgulch, bouldery

- Low bearing strength
- Surface compaction hazard

Hiore

- None

1871E—Hiore, stony-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Hiore, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- mountain valleys

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A1—1 to 3 inches; sandy loam
- A2—3 to 8 inches; gravelly coarse sandy loam
- Bw—8 to 36 inches; very gravelly loamy coarse sand
- BC—36 to 60 inches; very gravelly loamy coarse sand

Rock outcrop, granite

Composition: 35 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Bobowic and similar soils: 5 percent

Tepecreek, very bouldery and similar soils: 4 percent

Branham and similar soils: 3 percent

Kurrie, stony and similar soils: 3 percent

Management Considerations

Hiore, stony

- None

Rock outcrop, granite

- Nonsoil material

Bobowic

- None

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Branham

- None

Kurrie, stony

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

1871F—Hiore, stony-Rock outcrop complex, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 95 days

Component Description

Hiore, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- mountain valleys

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A1—1 to 3 inches; sandy loam

A2—3 to 8 inches; gravelly coarse sandy loam

Bw—8 to 36 inches; very gravelly loamy coarse sand

BC—36 to 60 inches; very gravelly loamy coarse sand

Rock outcrop, granite

Composition: 35 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Bobowic, very bouldery and similar soils: 5 percent

Kellygulch, bouldery and similar soils: 4 percent

Caseypeak, bouldery and similar soils: 3 percent

Kurrie, stony and similar soils: 3 percent

Management Considerations

Hiore, stony

- Steep slopes
- Erodible surface

Rock outcrop, granite

- Nonsoil material

Bobowic, very bouldery

- Steep slopes
- Erodible surface

Kellygulch, bouldery

- Steep slopes
- Erodible surface

Caseypeak, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Kurrie, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

1872E—Hiore-Clugulch-Rock outcrop complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Hiore and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- mountain slopes
- mountain valleys

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A1—1 to 3 inches; sandy loam

A2—3 to 8 inches; gravelly coarse sandy loam

Bw—8 to 36 inches; very gravelly loamy coarse sand

BC—36 to 60 inches; very gravelly loamy coarse sand

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 5 inches; sandy loam
- Bw—5 to 9 inches; gravelly sandy loam
- R—9 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Branham and similar soils: 5 percent

Clugulch, greater slopes and similar soils: 5 percent

Tepecreek, stony and similar soils: 5 percent

Management Considerations

Hiore

- None

Clugulch

- Shallow soil

Rock outcrop, granite

- Nonsoil material

Branham

- None

Clugulch, greater slopes

- Steep slopes
- Erodible surface
- Shallow soil

Tepecreek, stony

- Low bearing strength
- Surface compaction hazard

1872F—Hiore-Clugulch-Rock outcrop complex, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Hiore and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- mountain slopes
- mountain valleys

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/common juniper
- Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.3 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A1—1 to 3 inches; sandy loam

A2—3 to 8 inches; gravelly coarse sandy loam

Bw—8 to 36 inches; very gravelly loamy coarse sand

BC—36 to 60 inches; very gravelly loamy coarse sand

Clugulch and similar soils

Composition: 30 percent

Taxonomic class: Loamy, mixed, superactive Lithic Eutrocryepts

Landform:

- mountainsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Depth to restrictive feature: Lithic bedrock: 4 to 10 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.7 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 5 inches; sandy loam

Bw—5 to 9 inches; gravelly sandy loam
R—9 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Caseypeak, very bouldery and similar soils: 5 percent

Hiore, lesser slopes and similar soils: 5 percent

Tepecreek, stony and similar soils: 5 percent

Management Considerations

Hiore

- Steep slopes
- Erodible surface

Clugulch

- Steep slopes
- Erodible surface
- Shallow soil

Rock outcrop, granite

- Nonsoil material

Caseypeak, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Hiore, lesser slopes

- None

Tepecreek, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

**1910F—Elmark, very bouldery-Rock outcrop-Shaboom,
extremely bouldery, complex, 25 to 60 percent slopes**

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Elmark, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- escarpments
- hillsides
- mountainsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 9 inches; coarse sandy loam

Bt—9 to 21 inches; sandy clay loam

BC—21 to 32 inches; gravelly sandy loam

Cr—32 to 59 inches; weathered bedrock

R—59 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 35 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Shaboom, extremely bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Coarse sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; coarse sandy loam

Bw—4 to 13 inches; very gravelly coarse sandy loam

R—13 to 60 inches; unweathered bedrock

Additional Components

Ashbray, bouldery and similar soils: 4 percent

Breeton and similar soils: 3 percent

Kellygulch, very bouldery and similar soils: 3 percent

Management Considerations

Elmark, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Ashbray, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Breeton

- Low bearing strength

Kellygulch, very bouldery

- None

1965E—Lumpgulch, bouldery-Ymark, very bouldery-Rock outcrop complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 90 to 105 days

Component Description

Lumpgulch, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Landform:

- escarpments
- hillsides
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 23 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 8 inches; gravelly coarse sandy loam

Bt—8 to 23 inches; gravelly sandy clay loam

Cr—23 to 28 inches; weathered bedrock

R—28 to 60 inches; unweathered bedrock

Ymark, very bouldery and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- alluvial fans
- hillsides
- mountainbase on mountain slopes
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 40 to 58 inches
- lithic bedrock: 43 to 60 inches

Drainage class: Well drained

Parent material: Gravelly colluvium derived from granite and fine-grained igneous rock over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly sandy loam

Bt—7 to 37 inches; very cobbly sandy clay loam

BC—37 to 45 inches; very cobbly coarse sandy loam

Cr—45 to 59 inches; weathered bedrock

R—59 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

Shaboom, bouldery and similar soils: 6 percent
Kellygulch, very bouldery and similar soils: 5 percent
Hoyt and similar soils: 4 percent

Management Considerations

Lumpgulch, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Ymark, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Shaboom, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Kellygulch, very bouldery

- Steep slopes
- Erodible surface

Hoyt

- Low bearing strength
- Surface compaction hazard

1990F—Bobowic, very bouldery-Rock outcrop-Tepecreek, very bouldery, complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Bobowic, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Coarse-loamy, mixed, superactive Ustic Eutrocrypts

Landform:

- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 12 inches; gravelly coarse sandy loam
- Bw—12 to 22 inches; gravelly coarse sandy loam
- Cr—22 to 35 inches; weathered bedrock
- R—35 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 30 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Tepecreek, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Landform:

- escarpments
- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly sandy clay loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 40 inches
- lithic bedrock: 35 to 60 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.0 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 9 inches; very gravelly sandy clay loam
- Bt—9 to 19 inches; very gravelly sandy clay loam
- BC—19 to 36 inches; very gravelly sandy loam
- Cr—36 to 53 inches; weathered bedrock
- R—53 to 60 inches; unweathered bedrock

Additional Components

Caseypeak, very bouldery and similar soils: 5 percent

Peeler and similar soils: 5 percent

Management Considerations

Bobowic, very bouldery

- Steep slopes
- Erodible surface

Rock outcrop, granite

- Nonsoil material

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Caseypeak, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Peeler

- Steep slopes
- Erodible surface
- Surface compaction hazard

2040F—Shaboom, extremely bouldery-Rock outcrop-Rubble land association, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Shaboom, extremely bouldery and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/heartleaf arnica

Surface layer texture: Sandy loam

Rock fragments on the soil surface: 3 to 15 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; sandy loam
- Bw—4 to 13 inches; very gravelly coarse sandy loam
- R—13 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. The rubble land part consists of areas of hard, rounded granite cobbles, stones and boulders.

Landform: None assigned

Rubble land, granite

Composition: 20 percent

Definition: This component consists of areas of hard, rounded granite cobbles, stones and boulders.

Landform: None assigned

Additional Components

- Kellygulch, bouldery and similar soils: 6 percent
- Elmark, very bouldery and similar soils: 5 percent
- Ashbray, bouldery and similar soils: 4 percent
- Breeton and similar soils: 4 percent
- Burtoner, bouldery and similar soils: 3 percent
- Sawbuck, stony and similar soils: 3 percent

Management Considerations

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Rubble land, granite

- Nonsoil material

Kellygulch, bouldery

- Steep slopes
- Erodible surface

Elmark, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Ashbray, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Breeton

- Low bearing strength

Burtoner, bouldery

- Low bearing strength
- Surface compaction hazard

Sawbuck, stony

- Low bearing strength
- Surface compaction hazard

2041F—Rock outcrop-Catgulch, bouldery, complex, 15 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Rock outcrop, granite

Composition: 60 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Catgulch, bouldery and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Slope: 15 to 70 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

A—0 to 4 inches; gravelly sandy loam

Bw—4 to 12 inches; very gravelly sandy clay loam

Cr—12 to 15 inches; weathered bedrock

R—15 to 60 inches; unweathered bedrock

Additional Components

Ashbray, rubbly and similar soils: 6 percent
Shaboom, extremely bouldery and similar soils: 5 percent
Connieo, bouldery and similar soils: 4 percent
Crampton, very stony and similar soils: 4 percent
Breeton and similar soils: 3 percent
Clancy, stony and similar soils: 3 percent

Management Considerations

Rock outcrop, granite

- Nonsoil material

Catgulch, bouldery

- Steep slopes
- Erodible surface
- Shallow soil

Ashbray, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Shaboom, extremely bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Connieo, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Crampton, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Breeton

- Low bearing strength

Clancy, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

2043F—Rencot, very stony-Rencot, bouldery-Rock outcrop association, 15 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 3,800 to 5,000

Mean annual precipitation: 10 to 14 inches

Frost-free period: 90 to 115 days

Component Description

Rencot, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts

Landform:

- escarpments
- hillsides
- strath terraces

Slope: 15 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 4 inches; very cobbly loam
- Bk—4 to 19 inches; very gravelly loam
- R—19 to 60 inches; unweathered bedrock

Rencot, bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Calciustepts

Landform:

- escarpments
- hillsides
- strath terraces

Slope: 15 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 4 inches; very cobbly loam
- Bk—4 to 19 inches; very gravelly loam
- R—19 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 20 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 15 percent

Bronec and similar soils: 4 percent

Geohrock, stony and similar soils: 3 percent

Sieben, rubbly and similar soils: 3 percent

Management Considerations

Rencot, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rencot, bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Bronec

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Geohrock, stony

- Low bearing strength
- Surface compaction hazard

Sieben, rubbly

- Low bearing strength
- Surface compaction hazard

2045F—Caseypeak, very stony-Rock outcrop-Rubble land association, 15 to 60 percent slopes, dry

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Caseypeak, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountainsides
- ridges

Slope: 15 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very cobbly coarse sandy loam

Bw—6 to 17 inches; very gravelly coarse sandy loam

Cr—17 to 20 inches; weathered bedrock

R—20 to 60 inches; unweathered bedrock

Rock outcrop, volcanic, granite

Composition: 25 percent

Definition: This component consists mainly of exposures of hard coarse-grained (granite) and fine-grained (basalt or rhyolite) igneous bedrock. In granitic areas, a thin layer of decomposing granite (grus) covers the surface.

Landform: None assigned

Rubble land

Composition: 20 percent

Definition: This component consists of areas of rounded granite and angular basalt or rhyolite cobbles, stones and boulders.

Landform: None assigned

Additional Components

Hiore and similar soils: 6 percent

Peeler and similar soils: 5 percent

Clugulch and similar soils: 4 percent

Warwood and similar soils: 4 percent

Tepecreek, very bouldery and similar soils: 3 percent

Tuggle, very stony and similar soils: 3 percent

Management Considerations

Caseypeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop, volcanic, granite

- Nonsoil material

Rubble land

- Nonsoil material

Hiore

- None

Peeler

- Steep slopes
- Erodible surface
- Surface compaction hazard

Clugulch

- Shallow soil

Warwood

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tuggle, very stony

- Shallow soil

2090F—Caseypeak, very bouldery-Franconi, very bouldery-Rock outcrop complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Caseypeak, very bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- mountainsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Sandy and gravelly residuum weathered from granite

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Flooding: None

Available water capacity to 60-inch depth: Approximately 1.2 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; gravelly coarse sandy loam

Bw—6 to 17 inches; very gravelly coarse sandy loam

Cr—17 to 20 inches; weathered bedrock

R—20 to 60 inches; unweathered bedrock

Franconi, very bouldery and similar soils

Composition: 15 percent

Taxonomic class: Fine-loamy, mixed, superactive Ustic Glossocryalfs

Landform:

- alluvial fans
- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very cobbly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 23 to 40 inches

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.1 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

E—2 to 7 inches; very cobbly coarse sandy loam

Bt/E—7 to 21 inches; gravelly sandy clay loam

Bt—21 to 36 inches; gravelly clay loam

Cr—36 to 40 inches; weathered bedrock

R—40 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock.

Landform: None assigned

Additional Components

Rubble land, granite: 10 percent

Bobowic, very bouldery and similar soils: 7 percent

Peeler and similar soils: 6 percent

Tepecreek, very bouldery and similar soils: 4 percent

Tuggle, very stony and similar soils: 3 percent

Management Considerations

Caseypeak, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Franconi, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Rubble land, granite

- Nonsoil material

Bobowic, very bouldery

- Steep slopes
- Erodible surface

Peeler

- Steep slopes
- Erodible surface
- Surface compaction hazard

Tepecreek, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tuggle, very stony

- Steep slopes
- Erodible surface
- Shallow soil

2111E—Sebud, very stony-Hapgood family, complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

- A—0 to 14 inches; loam
- Bw—14 to 25 inches; very cobbly loam
- C—25 to 60 inches; extremely gravelly loam

Hapgood and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- alluvial fans
- escarpments
- mountain slopes

Slope: 8 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium over residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 6.7 inches

Typical profile:

- A—0 to 18 inches; gravelly loam
- C—18 to 60 inches; very gravelly loam

Additional Components

Surdal, stony and similar soils: 4 percent

Arrowpeak, very stony and similar soils: 3 percent

Tiban, very stony and similar soils: 3 percent

Management Considerations

Sebud, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hapgood

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

Arrowpeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Tiban, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

2112D—Sebud-Marcel complex, 4 to 25 percent slopes, bouldery

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, bouldery and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

Slope: 15 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

- A—0 to 14 inches; cobbly loam
- Bw—14 to 25 inches; very gravelly loam
- C—25 to 60 inches; extremely gravelly loam

Marcel, bouldery and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls

Landform:

- alluvial fans
- mountainbase on mountain slopes

Slope: 15 to 25 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 7.4 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A1—2 to 11 inches; gravelly loam
- A2—11 to 20 inches; gravelly loam

Bt1—20 to 26 inches; very gravelly sandy clay loam

Bt2—26 to 60 inches; very gravelly sandy clay loam

Additional Components

Tibkey, bouldery and similar soils: 4 percent

Libeg, stony and similar soils: 3 percent

Surdal, stony and similar soils: 3 percent

Management Considerations

Sebud, bouldery

- Low bearing strength
- Surface compaction hazard

Marcel, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

2121F—Hapgood family-Hanson-Tiban complex, 25 to 60 percent slopes, very stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 95 days

Component Description

Hapgood, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Landform:

- alluvial fans
- escarpments
- mountain slopes

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.6 inches

Typical profile:

A—0 to 18 inches; very stony loam

C—18 to 60 inches; very cobbly loam

Hanson, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Landform:

- alluvial fans
- mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from limestone, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.2 inches

Typical profile:

A—0 to 6 inches; very stony loam

Bw—6 to 20 inches; very stony loam

Bk—20 to 60 inches; very cobbly loam

Tiban, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountainbase on mountain slopes

Slope: 25 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

A—0 to 7 inches; very cobbly loam

Bw1—7 to 14 inches; very gravelly loam

Bw2—14 to 28 inches; very gravelly loam

Bk—28 to 60 inches; very gravelly loam

Additional Components

Burtoner, very stony and similar soils: 5 percent

Connieo and similar soils: 5 percent

Firada, very stony and similar soils: 4 percent

Rock outcrop, volcanic, sandstone: 4 percent

Breeton and similar soils: 2 percent

Management Considerations

Hapgood, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Hanson, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Tiban, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Burtoner, very stony

- Low bearing strength
- Surface compaction hazard

Connieo

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Firada, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic, sandstone

- Nonsoil material

Breeton

- Low bearing strength

2211E—Sebud-Arrowpeak family, stony, complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 8,000

Mean annual precipitation: 15 to 30 inches

Frost-free period: 30 to 70 days

Component Description

Sebud and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

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Slope: 15 to 45 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Gravelly loam
Depth to restrictive feature: None noted
Drainage class: Well drained
Parent material: Gravelly slope alluvium derived from basalt
Flooding: None
Available water capacity to 60-inch depth: Approximately 5.8 inches
Typical profile:
A—0 to 14 inches; gravelly loam
Bw—14 to 30 inches; very gravelly sandy clay loam
C—30 to 60 inches; extremely gravelly sandy clay loam

Arrowpeak, stony and similar soils

Composition: 25 percent
Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls
Landform:

- mountain slopes
- ridges

Slope: 8 to 15 percent
Native plant cover type: Rangeland
Habitat type(s): None noted
Surface layer texture: Very gravelly loam
Rock fragments on the soil surface: 0.01 to 0.10 percent stones
Depth to restrictive feature: Lithic bedrock: 10 to 20 inches
Drainage class: Well drained
Parent material: Gravelly residuum weathered from basalt
Flooding: None
Available water capacity to 60-inch depth: Approximately 1.5 inches
Typical profile:
A—0 to 8 inches; very gravelly loam
Bw—8 to 18 inches; very cobbly loam
R—18 to 60 inches; unweathered bedrock

Additional Components

Surdal, stony and similar soils: 4 percent
Rock outcrop, volcanic, sandstone: 3 percent
Sebud, stony and similar soils: 3 percent

Management Considerations

Sebud

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Arrowpeak, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic, sandstone

- Nonsoil material

Sebud, stony

- Low bearing strength
- Surface compaction hazard

2211F—Sebud, very stony-Arrowpeak family, very stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

A—0 to 14 inches; very cobbly loam

Bw—14 to 25 inches; very cobbly loam

C—25 to 60 inches; extremely gravelly loam

Arrowpeak, very stony and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very gravelly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- A—0 to 8 inches; very gravelly loam
- Bw—8 to 18 inches; very cobbly loam
- R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 15 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 10 percent

Libeg, very stony and similar soils: 6 percent

Surdal, stony and similar soils: 4 percent

Management Considerations

Sebud, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Arrowpeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Libeg, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

2212D—Sebud, very stony-Libeg-Arrowpeak family, stony, complex, 4 to 15 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

- A—0 to 14 inches; very cobbly loam
- Bw—14 to 25 inches; very cobbly loam
- C—25 to 60 inches; extremely gravelly loam

Arrowpeak, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- A—0 to 4 inches; gravelly loam
- Bw—4 to 16 inches; extremely gravelly loam
- R—16 to 60 inches; unweathered bedrock

Libeg, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 4 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 10 inches; gravelly loam

Bt1—10 to 17 inches; very gravelly clay loam

Bt2—17 to 31 inches; very cobbly loam

Bt3—31 to 60 inches; extremely cobbly sandy loam

Additional Components

Surdal, stony and similar soils: 4 percent

Rock outcrop, volcanic, sandstone: 3 percent

Tibkey, bouldery and similar soils: 3 percent

Management Considerations

Sebud, very stony

- Low bearing strength
- Surface compaction hazard

Arrowpeak, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic, sandstone

- Nonsoil material

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

2212E—Sebud, very stony-Libeg, stony-Arrowpeak family, stony, complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Sebud, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Landform:

- alluvial fans
- mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.6 inches

Typical profile:

A—0 to 14 inches; very cobbly loam

Bw—14 to 25 inches; very cobbly loam

C—25 to 60 inches; extremely gravelly loam

Arrowpeak, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Landform:

- mountain slopes
- ridges

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

A—0 to 4 inches; gravelly loam

Bw—4 to 16 inches; extremely gravelly loam

R—16 to 60 inches; unweathered bedrock

Libeg, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Landform:

- alluvial fans
- mountain slopes
- mountain valleys
- outwash terraces

Slope: 15 to 35 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Soil Survey of Deerlodge National Forest Area, Montana

Parent material: Gravelly till, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

A—0 to 10 inches; loam

Bt1—10 to 17 inches; very gravelly clay loam

Bt2—17 to 31 inches; very gravelly sandy clay loam

Bt3—31 to 60 inches; extremely cobbly sandy loam

Additional Components

Surdal, stony and similar soils: 4 percent

Tibkey, bouldery and similar soils: 3 percent

Worock, very bouldery and similar soils: 3 percent

Management Considerations

Sebud, very stony

- Low bearing strength
- Surface compaction hazard

Arrowpeak, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Surdal, stony

- Low bearing strength
- Surface compaction hazard

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Worock, very bouldery

- Low bearing strength
- Surface compaction hazard

2261E—Lowland loam, 15 to 35 percent slopes, stony

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Lowland, stony and similar soils

Composition: 75 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Haplocryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountainbase on mountain slopes

Slope: 15 to 35 percent

Soil Survey of Deerlodge National Forest Area, Montana

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.3 inches

Typical profile:

A—0 to 12 inches; loam

Bw—12 to 20 inches; very cobbly coarse sandy loam

BC—20 to 38 inches; very cobbly sandy loam

C—38 to 60 inches; very cobbly loamy sand

Additional Components

Arrowpeak, very stony and similar soils: 10 percent

Lowland, lesser slopes, stony and similar soils: 10 percent

Judco, stony and similar soils: 5 percent

Management Considerations

Lowland, stony

- Low bearing strength

Arrowpeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Lowland, lesser slopes, stony

- Low bearing strength

Judco, stony

- Low bearing strength
- Surface compaction hazard

2281F—Judco, stony-Torpy, stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Judco, stony and similar soils

Composition: 55 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocrypts

Landform:

- divides
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Soil Survey of Deerlodge National Forest Area, Montana

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: Paralithic bedrock: 40 to 60 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium over residuum weathered from welded tuff

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

A1—2 to 4 inches; very cobbly loam

A2—4 to 6 inches; very gravelly sandy loam

Bw—6 to 23 inches; very gravelly sandy loam

BC—23 to 58 inches; very gravelly sandy clay loam

Cr—58 to 60 inches; weathered bedrock

Torpy, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; gravelly loam

E—4 to 9 inches; gravelly loam

Bw—9 to 35 inches; very gravelly loam

BC—35 to 60 inches; very cobbly sandy loam

Rock outcrop, tuff

Composition: 10 percent

Definition: This component consists mainly of exposed areas of welded tuff, rhyolitic tuff and/or tuffaceous volcanic rocks.

Landform: None assigned

Additional Components

Arrowpeak, lesser slopes, very stony and similar soils: 5 percent

Arrowpeak, very stony and similar soils: 5 percent

Torpy, stony and similar soils: 5 percent

Management Considerations

Judco, stony

- Steep slopes
- Erodible surface

- Low bearing strength
 - Surface compaction hazard
- Torpy, stony
- Steep slopes
 - Erodible surface
 - Low bearing strength
- Rock outcrop, tuff
- Nonsoil material
- Arrowpeak, lesser slopes, very stony
- Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Arrowpeak, very stony
- Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Torpy, stony
- Low bearing strength

2301F—Mocmont, bouldery-Roegulch, rubbly-Rock outcrop complex, 25 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Mocmont, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Landform:

- alluvial fans
- escarpments
- mountainbase on mountain slopes
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from fine-grained sandstone

Flooding: None

Available water capacity to 60-inch depth: Approximately 3.1 inches

Typical profile:

A—0 to 1 inches; very cobbly loam

Bt/E—1 to 9 inches; very cobbly clay loam

Soil Survey of Deerlodge National Forest Area, Montana

Bt—9 to 37 inches; very gravelly sandy clay loam

BC—37 to 60 inches; extremely gravelly loamy coarse sand

Roegulch, rubbly and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Landform:

- escarpments
- hillsides
- ridges

Slope: 25 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.1 inches

Typical profile:

A—0 to 4 inches; very stony loam

Bw—4 to 16 inches; very cobbly sandy clay loam

Cr—16 to 19 inches; weathered bedrock

R—19 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 10 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 5 percent

Brickner, very bouldery and similar soils: 2 percent

Sawbuck, stony and similar soils: 2 percent

Cometcrik and similar soils: 1 percent

Management Considerations

Mocmont, bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Roegulch, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

- Rock outcrop, volcanic
 - Nonsoil material
- Rubble land, volcanic
 - Nonsoil material
- Brickner, very bouldery
 - Steep slopes
 - Erodible surface
 - Shallow soil
 - Low bearing strength
 - Surface compaction hazard
- Sawbuck, stony
 - Low bearing strength
 - Surface compaction hazard
- Cometrik
 - Flooding
 - High water table
 - High windthrow hazard
 - Low bearing strength
 - Surface compaction hazard

2311F—Worock family, stony-Cowood family, very stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Worock, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; very gravelly sandy loam
- E/Bt—11 to 19 inches; very gravelly sandy clay loam
- Bt—19 to 38 inches; very gravelly clay loam
- BC—38 to 60 inches; very gravelly loam

Cowood, very stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- escarpments
- mountainsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very channery sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 6 inches; very channery sandy loam
- Bw—6 to 19 inches; extremely channery loam
- R—19 to 60 inches; unweathered bedrock

Additional Components

Arrowpeak, very stony and similar soils: 5 percent

Elve, very stony and similar soils: 5 percent

Component Description

Rock outcrop, volcanic

Composition: 5 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 5 percent

Worock, lesser slopes and similar soils: 5 percent

Management Considerations

Worock, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Arrowpeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil

- Low bearing strength
 - Surface compaction hazard
- Elve, very stony
- Steep slopes
 - Erodible surface
 - Low bearing strength
 - Surface compaction hazard
- Rock outcrop, volcanic
- Nonsoil material
- Rubble land, volcanic
- Nonsoil material
- Worock, lesser slopes
- Low bearing strength
 - Surface compaction hazard

2312F—Worock family, stony-Elve, stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Worock, stony and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

- Oi—0 to 3 inches; slightly decomposed plant material
- E—3 to 11 inches; very gravelly sandy loam
- E/Bt—11 to 19 inches; very gravelly sandy clay loam
- Bt—19 to 38 inches; very gravelly clay loam
- BC—38 to 60 inches; very gravelly loam

Elve, stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 6 inches; very gravelly sandy loam
- E—6 to 12 inches; very gravelly fine sandy loam
- Bw—12 to 29 inches; extremely gravelly fine sandy loam
- C—29 to 60 inches; extremely gravelly fine sandy loam

Additional Components

Cowood, very bouldery and similar soils: 5 percent

Component Description

Rock outcrop, volcanic

Composition: 5 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 5 percent

Worock, lesser slopes and similar soils: 5 percent

Management Considerations

Worock, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve, stony

- Steep slopes
- Erodible surface

Cowood, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Worock, lesser slopes

- Low bearing strength
- Surface compaction hazard

2321E—Torpy gravelly loam, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Torpy and similar soils

Composition: 90 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; gravelly loam
- E—4 to 9 inches; gravelly loam
- Bw—9 to 35 inches; very gravelly loam
- BC—35 to 60 inches; very cobbly sandy loam

Additional Components

Torpy, greater slopes and similar soils: 5 percent

Arrowpeak, stony and similar soils: 3 percent

Arrowpeak, very stony and similar soils: 2 percent

Management Considerations

Torpy

- Low bearing strength

Torpy, greater slopes

- Steep slopes
- Erodible surface
- Low bearing strength

Arrowpeak, stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Arrowpeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

2321F—Torpy gravelly loam, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Torpy and similar soils

Composition: 85 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Gravelly loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.7 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; gravelly loam
- E—4 to 9 inches; gravelly loam
- Bw—9 to 35 inches; very gravelly loam
- BC—35 to 60 inches; very cobbly sandy loam

Additional Components

Torpy, lesser slopes and similar soils: 10 percent

Arrowpeak, lesser slopes, very stony and similar soils: 3 percent

Arrowpeak, very stony and similar soils: 2 percent

Management Considerations

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Torpy, lesser slopes

- Low bearing strength

Arrowpeak, lesser slopes, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Arrowpeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

2322E—Lowland-Torpy complex, 15 to 35 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Lowland and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Haplocryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountainbase on mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly sandy clay loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 12 inches; gravelly sandy clay loam

Bw—12 to 20 inches; very cobbly coarse sandy loam

BC—20 to 38 inches; very cobbly sandy loam

C—38 to 60 inches; very cobbly loamy sand

Torpy and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 15 to 35 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; loam
- E—4 to 9 inches; cobbly loam
- Bw—9 to 35 inches; very cobbly loam
- BC—35 to 60 inches; very cobbly loam

Additional Components

- Arrowpeak, very stony and similar soils: 5 percent
- Judco, stony and similar soils: 5 percent
- Rock outcrop, tuff: 3 percent
- Rubble land, tuff: 2 percent

Management Considerations

Lowland

- Low bearing strength

Torpy

- Low bearing strength

Arrowpeak, very stony

- Shallow soil
- Low bearing strength
- Surface compaction hazard

Judco, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, tuff

- Nonsoil material

Rubble land, tuff

- Nonsoil material

2322F—Lowland-Torpy complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Lowland and similar soils

Composition: 60 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Haplocryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountainbase on mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly sandy clay loam

Depth to restrictive feature: None noted

Soil Survey of Deerlodge National Forest Area, Montana

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.8 inches

Typical profile:

A—0 to 12 inches; gravelly sandy clay loam

Bw—12 to 20 inches; very cobbly coarse sandy loam

BC—20 to 38 inches; very cobbly sandy loam

C—38 to 60 inches; very cobbly loamy sand

Torpy and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; loam

E—4 to 9 inches; cobbly loam

Bw—9 to 35 inches; very cobbly loam

BC—35 to 60 inches; very cobbly loam

Additional Components

Arrowpeak, very stony and similar soils: 5 percent

Torpy, lesser slopes and similar soils: 5 percent

Rock outcrop, tuff: 3 percent

Rubble land, tuff: 2 percent

Management Considerations

Lowland

- Steep slopes
- Erodible surface
- Low bearing strength

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Arrowpeak, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

- Torpy, lesser slopes
 - Low bearing strength
- Rock outcrop, tuff
 - Nonsoil material
- Rubble land, tuff
 - Nonsoil material

2331B—Mooseflat loam, 1 to 4 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Mooseflat and similar soils

Composition: 80 percent

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Landform:

- drainageways
- flood plains
- flood-plain steps

Slope: 1 to 4 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Very poorly drained

Parent material: Organic material over fine-loamy alluvium over sandy and gravelly alluvium

Flooding: Frequent

Water table: Present

Ponding duration: Brief

Available water capacity to 60-inch depth: Approximately 5.4 inches

Typical profile:

- A—0 to 18 inches; loam
- BCg—18 to 22 inches; fine sandy loam
- 2Cg—22 to 60 inches; very cobbly loamy sand

Additional Components

Elvick and similar soils: 10 percent

Libeg, stony and similar soils: 5 percent

Libeg, greater slopes, stony and similar soils: 5 percent

Management Considerations

Mooseflat

- Flooding
- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Elvick

- High water table
- High windthrow hazard
- Low bearing strength
- Surface compaction hazard

Libeg, stony

- Low bearing strength
- Surface compaction hazard

Libeg, greater slopes, stony

- Low bearing strength
- Surface compaction hazard

2391C—Marcel, very bouldery-Tibkey, bouldery, complex, 2 to 8 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Marcel, very bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls

Landform:

- alluvial fans
- mountainbase on mountain slopes

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly silt loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 7.6 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A1—2 to 11 inches; gravelly silt loam

A2—11 to 20 inches; gravelly loam

Bt1—20 to 26 inches; very gravelly sandy clay loam

Bt2—26 to 60 inches; very gravelly sandy clay loam

Tibkey, bouldery and similar soils

Composition: 40 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Fluvaquentic Haplocryolls

Landform:

- alluvial fans
- mountainflank on mountain slopes

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- mountainbase on mountain slopes
- mountain valleys

Slope: 2 to 8 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Mucky silt loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat poorly drained

Parent material: Gravelly slope alluvium derived from basalt

Flooding: None

Water table: Present

Available water capacity to 60-inch depth: Approximately 6.9 inches

Typical profile:

A—0 to 8 inches; mucky silt loam

Bw1—8 to 13 inches; very gravelly loam

Bw2—13 to 32 inches; very gravelly loam

BC—32 to 60 inches; very gravelly loam

Additional Components

Sebud, bouldery and similar soils: 6 percent

Libeg, bouldery and similar soils: 5 percent

Monaberg, bouldery and similar soils: 5 percent

Elvick, very bouldery and similar soils: 4 percent

Management Considerations

Marcel, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Tibkey, bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

Sebud, bouldery

- Low bearing strength
- Surface compaction hazard

Libeg, bouldery

- Low bearing strength
- Surface compaction hazard

Monaberg, bouldery

- Low bearing strength
- Surface compaction hazard

Elvick, very bouldery

- High water table
- Low bearing strength
- Surface compaction hazard

2411E—Ashbray, bouldery-Rock outcrop-Rubble land complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Ashbray, bouldery and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid, frigid Lithic Ustorthents

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 8 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 4 inches; gravelly coarse sandy loam
- C—4 to 14 inches; very gravelly coarse sandy loam
- Cr—14 to 17 inches; bedrock
- R—17 to 60 inches; bedrock

Rock outcrop, granite

Composition: 20 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock.

Landform: None assigned

Rubble land, granite

Composition: 20 percent

Definition: This component consists of areas of hard, rounded granite cobbles, stones and boulders.

Landform: None assigned

Additional Components

Baxton, bouldery and similar soils: 5 percent

Elmark, bouldery and similar soils: 4 percent

Catgulch, stony and similar soils: 3 percent

Connieo, very bouldery and similar soils: 3 percent

Management Considerations

Ashbray, bouldery

- Steep slopes
- Erodible surface

- Shallow soil
 - Low bearing strength
- Rock outcrop, granite
- Nonsoil material
- Rubble land, granite
- Nonsoil material
- Baxton, bouldery
- None
- Elmark, bouldery
- Low bearing strength
 - Surface compaction hazard
- Catgulch, stony
- Shallow soil
- Connieo, very bouldery
- Shallow soil
 - Low bearing strength
 - Surface compaction hazard

2412F—Ashbray, rubbly-Rock outcrop-Kellygulch, very stony, complex, 35 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 95 days

Component Description

Ashbray, rubbly and similar soils

Composition: 45 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid, frigid Lithic Ustorthents

Landform:

- escarpments
- head slope on hillsides
- side slope on hillsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Stony coarse sandy loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature:

- paralithic bedrock: 10 to 19 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Somewhat excessively drained

Parent material: Sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

- A—0 to 4 inches; stony coarse sandy loam
- C—4 to 14 inches; very gravelly sandy loam
- Cr—14 to 17 inches; weathered bedrock
- R—17 to 60 inches; unweathered bedrock

Kellygulch, very stony and similar soils

Composition: 15 percent

Taxonomic class: Coarse-loamy, mixed, superactive, frigid Typic Haplustepts

Landform:

- divides
- escarpments
- hillsides
- ridges

Slope: 35 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very cobbly sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 30 to 40 inches

Drainage class: Well drained

Parent material: Coarse-loamy slope alluvium over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.8 inches

Typical profile:

- Oi—0 to 2 inches; slightly decomposed plant material
- A—2 to 7 inches; very cobbly sandy loam
- Bw—7 to 29 inches; gravelly coarse sandy loam
- Cr—29 to 33 inches; weathered bedrock
- R—33 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 15 percent

Definition: This component consists mainly of exposed, hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock.

Landform: None assigned

Additional Components

Rubble land, granite: 15 percent

Connieo, very bouldery and similar soils: 4 percent

Catgulch, very bouldery and similar soils: 3 percent

Elmark, very bouldery and similar soils: 3 percent

Management Considerations

Ashbray, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Kellygulch, very stony

- Steep slopes
- Erodible surface

Rock outcrop, granite

- Nonsoil material

Rubble land, granite

- Nonsoil material

Connieo, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Catgulch, very bouldery

- Steep slopes
- Erodible surface
- Shallow soil

Elmark, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

2471F—Elve, stony-Worock family, stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,000 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve, stony and similar soils

Composition: 50 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.6 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; loam

E—6 to 12 inches; very gravelly fine sandy loam

Bw—12 to 29 inches; extremely gravelly fine sandy loam

C—29 to 60 inches; extremely gravelly fine sandy loam

Worock, stony and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

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Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass-kinnikinnick phase

Surface layer texture: Loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from metavolcanics

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.5 inches

Typical profile:

Oi—0 to 3 inches; slightly decomposed plant material

E—3 to 11 inches; loam

E/Bt—11 to 19 inches; very gravelly sandy clay loam

Bt—19 to 38 inches; very gravelly clay loam

BC—38 to 60 inches; very gravelly loam

Rock outcrop, volcanic

Composition: 20 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock. Boulders and stones occupy a small part of the area.

Landform: None assigned

Additional Components

Cowood, rubbly and similar soils: 3 percent

Hapgood and similar soils: 2 percent

Management Considerations

Elve, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Worock, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Cowood, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Hapgood

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

2485F—Redfern, rubbly-Rock outcrop-Tigeron family, very bouldery, association, 25 to 70 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Redfern, rubbly and similar soils

Composition: 25 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Landform:

- divides
- escarpments
- mountain slopes
- ridges

Slope: 25 to 70 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/common juniper

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.5 inches

Typical profile:

- A—0 to 3 inches; very stony loam
- E—3 to 7 inches; very cobbly loam
- Bt—7 to 18 inches; very cobbly loam
- R—18 to 60 inches; unweathered bedrock

Rock outcrop, volcanic

Composition: 25 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Additional Components

Rubble land, volcanic: 20 percent

Component Description

Tigeron, very bouldery and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Landform:

- alluvial fans
- mountain slopes

Soil Survey of Deerlodge National Forest Area, Montana

- ridges
- saddles

Slope: 25 to 50 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/rough fescue

Surface layer texture: Very cobbly loam

Rock fragments on the soil surface: 0.10 to 3.00 percent boulders

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.0 inches

Typical profile:

Oe—0 to 2 inches; slightly decomposed plant material

E—2 to 21 inches; very cobbly loam

Bt1—21 to 38 inches; extremely cobbly loam

Bt2—38 to 60 inches; extremely cobbly clay loam

Additional Components

Elve, very stony and similar soils: 4 percent

Cowood, rubbly and similar soils: 3 percent

Worock, rubbly and similar soils: 3 percent

Management Considerations

Redfern, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Elve, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Cowood, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Worock, rubbly

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

2486F—Elve, rubbly-Rock outcrop-Rubble land complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,500

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Elve, rubbly and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocryepts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/Idaho fescue

Surface layer texture: Very stony loam

Rock fragments on the soil surface: 15 to 50 percent boulders

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.2 inches

Typical profile:

O_i—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very stony loam

E—6 to 12 inches; very stony loam

B_w—12 to 33 inches; extremely flaggy loam

C—33 to 60 inches; extremely flaggy coarse sandy loam

Rock outcrop, volcanic

Composition: 25 percent

Definition: This component consists mainly of exposed areas of hard, fractured, fine-grained volcanic extrusive bedrock.

Landform: None assigned

Rubble land, volcanic

Composition: 25 percent

Definition: This component consists of extensive areas of hard, fine-grained, angular volcanic cobbles, stones and boulders.

Landform: None assigned

Additional Components

Tigeron, very bouldery and similar soils: 7 percent

Redfern, rubbly and similar soils: 6 percent

Cowood, rubbly and similar soils: 4 percent

Helmville, rubbly and similar soils: 3 percent

Management Considerations

Elve, rubbly

- Steep slopes
- Erodible surface
- Low bearing strength

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

Tigeron, very bouldery

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Redfern, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Cowood, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Helmville, rubbly

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

2662E—Elve-Cowood family, complex, 15 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 6,000 to 8,000

Mean annual precipitation: 20 to 30 inches

Frost-free period: 30 to 60 days

Component Description

Elve and similar soils

Composition: 70 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Ustic Eutrocrypts

Landform:

- alluvial fans
- mountainflank on mountain slopes
- mountain valleys

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Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Very gravelly sandy loam

Depth to restrictive feature: None noted

Drainage class: Somewhat excessively drained

Parent material: Gravelly colluvium derived from basalt

Flooding: None

Available water capacity to 60-inch depth: Approximately 2.1 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 6 inches; very gravelly sandy loam

E—6 to 12 inches; very gravelly fine sandy loam

Bw—12 to 29 inches; extremely gravelly fine sandy loam

C—29 to 60 inches; extremely gravelly fine sandy loam

Cowood and similar soils

Composition: 15 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Lithic Eutrocrypts

Landform:

- escarpments
- mountainsides
- ridges

Slope: 15 to 45 percent

Native plant cover type: Forestland

Habitat type(s): Subalpine fir/grouse whortleberry

Surface layer texture: Very channery sandy loam

Depth to restrictive feature: Lithic bedrock: 10 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from sandstone, unspecified

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.0 inches

Typical profile:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 6 inches; very channery sandy loam

Bw—6 to 19 inches; extremely channery loam

R—19 to 60 inches; unweathered bedrock

Additional Components

Worock, very bouldery and similar soils: 5 percent

Warwood, stony and similar soils: 4 percent

Rock outcrop, volcanic: 3 percent

Rubble land, volcanic: 3 percent

Management Considerations

Elve

- Steep slopes
- Erodible surface

Cowood

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Worock, very bouldery

- Low bearing strength
- Surface compaction hazard

Warwood, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, volcanic

- Nonsoil material

Rubble land, volcanic

- Nonsoil material

2681E—Sawbuck-Catgulch, stony, complex, 8 to 45 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Sawbuck and similar soils

Composition: 65 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- alluvial fans
- escarpments
- hillsides
- mountainbase on mountain slopes

Slope: 15 to 45 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Depth to restrictive feature: Paralithic bedrock: 46 to 60 inches

Drainage class: Well drained

Parent material: Gravelly colluvium derived from basalt over residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 4.4 inches

Typical profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 7 inches; gravelly sandy loam

Bt—7 to 24 inches; very gravelly sandy clay loam

BC—24 to 47 inches; very gravelly sandy clay loam

Cr—47 to 60 inches; weathered bedrock

Catgulch, stony and similar soils

Composition: 20 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Soil Survey of Deerlodge National Forest Area, Montana

Landform:

- divides
- escarpments
- hillsides
- ridges
- spurs

Slope: 8 to 15 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 0.9 inches

Typical profile:

- A—0 to 4 inches; gravelly sandy loam
- Bw—4 to 12 inches; very gravelly sandy clay loam
- Cr—12 to 15 inches; weathered bedrock
- R—15 to 60 inches; unweathered bedrock

Additional Components

Crackerville and similar soils: 6 percent

Sawicki, very stony and similar soils: 4 percent

Bielenberg and similar soils: 3 percent

Rock outcrop, granite: 2 percent

Management Considerations

Sawbuck

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Catgulch, stony

- Shallow soil

Crackerville

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Sawicki, very stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Bielenberg

- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

2691F—Connieo, very stony-Crackerville, stony-Rock outcrop complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 4,400 to 6,000

Mean annual precipitation: 15 to 19 inches

Frost-free period: 80 to 105 days

Component Description

Connieo, very stony and similar soils

Composition: 40 percent

Taxonomic class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.10 to 3.00 percent stones

Depth to restrictive feature:

- paralithic bedrock: 10 to 18 inches
- lithic bedrock: 12 to 20 inches

Drainage class: Well drained

Parent material: Loamy residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.7 inches

Typical profile:

- A—0 to 8 inches; gravelly coarse sandy loam
- Bt—8 to 14 inches; gravelly sandy clay loam
- Cr—14 to 18 inches; weathered bedrock
- R—18 to 60 inches; unweathered bedrock

Crackerville, stony and similar soils

Composition: 35 percent

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Landform:

- escarpments
- hillsides
- ridges

Slope: 35 to 60 percent

Native plant cover type: Rangeland

Habitat type(s): None noted

Surface layer texture: Gravelly coarse sandy loam

Rock fragments on the soil surface: 0.01 to 0.10 percent stones

Depth to restrictive feature:

- paralithic bedrock: 20 to 38 inches
- lithic bedrock: 24 to 40 inches

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from granite over sandy and gravelly residuum weathered from granite

Flooding: None

Available water capacity to 60-inch depth: Approximately 1.9 inches

Typical profile:

- A—0 to 7 inches; gravelly coarse sandy loam
- Bt—7 to 15 inches; very gravelly sandy clay loam
- BC—15 to 23 inches; gravelly coarse sandy loam
- Cr—23 to 31 inches; weathered bedrock
- R—31 to 60 inches; unweathered bedrock

Rock outcrop, granite

Composition: 10 percent

Definition: Rock outcrop consists mainly of exposed areas of hard, coarse-grained granite bedrock. In places, a thin layer of decomposing granite (grus) covers the bedrock. Large, rounded, granite boulders are present in the vicinity of the outcrop.

Landform: None assigned

Additional Components

- Bielenberg and similar soils: 5 percent
- Clancy and similar soils: 4 percent
- Ashbray, rubbly and similar soils: 2 percent
- Breeton and similar soils: 2 percent
- Burtoner, very stony and similar soils: 2 percent

Management Considerations

Connieo, very stony

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength
- Surface compaction hazard

Crackerville, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, granite

- Nonsoil material

Bielenberg

- Low bearing strength
- Surface compaction hazard

Clancy

- Low bearing strength
- Surface compaction hazard

Ashbray, rubbly

- Steep slopes
- Erodible surface
- Shallow soil
- Low bearing strength

Breeton

- Low bearing strength

Burtoner, very stony

- Steep slopes
- Erodible surface

- Low bearing strength
- Surface compaction hazard

2705F—Vitroff-Torpy complex, 35 to 60 percent slopes

Field investigation intensity: Order 2

Map Unit Setting

Elevation: 5,500 to 7,000

Mean annual precipitation: 15 to 24 inches

Frost-free period: 50 to 70 days

Component Description

Vitroff and similar soils

Composition: 55 percent

Taxonomic class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Landform:

- alluvial fans
- mountain slopes
- saddles

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s):

- Douglas-fir/twinflower
- Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Fine-loamy slope alluvium derived from tuffaceous volcanic rock

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.8 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- E—1 to 8 inches; loam
- Bt and E—8 to 15 inches; gravelly sandy clay loam
- Bt—15 to 33 inches; gravelly clay loam
- BC—33 to 60 inches; extremely gravelly loamy coarse sand

Torpy and similar soils

Composition: 30 percent

Taxonomic class: Loamy-skeletal, mixed, superactive Vitrandic Eutrocryepts

Landform:

- alluvial fans
- mountain slopes

Slope: 35 to 60 percent

Native plant cover type: Forestland

Habitat type(s): Douglas-fir/pinegrass

Surface layer texture: Loam

Depth to restrictive feature: None noted

Drainage class: Well drained

Parent material: Gravelly slope alluvium derived from tuffaceous volcanic rocks

Flooding: None

Available water capacity to 60-inch depth: Approximately 5.9 inches

Typical profile:

- Oi—0 to 1 inches; slightly decomposed plant material
- A—1 to 4 inches; loam
- E—4 to 9 inches; cobbly loam
- Bw—9 to 35 inches; very cobbly loam
- BC—35 to 60 inches; very cobbly loam

Additional Components

- Judco, stony and similar soils: 10 percent
- Rock outcrop, tuff: 2 percent
- Vitroff, lesser slopes and similar soils: 2 percent
- Rubble land, tuff: 1 percent

Management Considerations

Vitroff

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Torpy

- Steep slopes
- Erodible surface
- Low bearing strength

Judco, stony

- Steep slopes
- Erodible surface
- Low bearing strength
- Surface compaction hazard

Rock outcrop, tuff

- Nonsoil material

Vitroff, lesser slopes

- Low bearing strength
- Surface compaction hazard

Rubble land, tuff

- Nonsoil material

K—Rock outcrop and Rubble land

Field investigation intensity: Order 3

Component Description

Rock outcrop

Composition: 0 to 100 percent

Definition: Rock outcrop consists of exposures of bare bedrock.

Landform: None assigned

Rubble land

Composition: 0 to 100 percent

Definition: Rubble land consists of areas of cobbles, stones, and boulders

Landform: None assigned

Management Considerations

Rock outcrop

- Nonsoil material

Rubble land

- Nonsoil material

M—Dumps, mine

Field investigation intensity: Order 2

Component Description

Dumps, mine

Composition: 100 percent

Definition: Mine Dumps are piles of waste rock generally in the vicinity of active mining sites or are remnants of earlier mining activity.

Landform: None assigned

Management Considerations

Dumps, mine

- Nonsoil material

W—Water

Field investigation intensity: Order 2

Component Description

Water

Composition: 100 percent

Definition: Water includes streams, lakes, ponds, and reservoirs that in most years are covered with water at least during the period warm enough for plants to grow. Many areas are covered with water throughout the year.

Landform: None assigned

Management Considerations

Water

- Nonsoil material

Use and Management of the Soils

This soil survey is an inventory and evaluation of soils in the survey area. It can be used to coordinate land uses to the limitations and potentials of natural resources and the environment. In addition, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of soils. They collect data on soil physical properties, chemical properties, related site observations, and other factors that affect various soil uses and management. Field experience and collected performance data are used as a basis in predicting soil behavior.

Information in this section can be used to plan use and management of soils for rangeland and forestland; as crops and pasture; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. This information can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for camp areas, road and trails, log landings, and appropriate trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Some tables identify the limitations that affect specified uses and indicate the severity of those limitations. Other tables identify the potential or the degree of potential existing. Typically, the ratings in these tables are in both text and numerical format.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for limitation classes are *not limited*, *somewhat limited*, and *very limited*. The suitability ratings are expressed as *well suited*, *moderately suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact

on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last. Potential interpretations are labeled as such, with the lower number having the lowest potential and the higher number having the greatest potential for a use or material.

General Land Access and Management

The table “Hazard of Erosion and Suitability for Roads and Trails” shows interpretive ratings related to hazard of erosion (disturbed site), hazard of erosion on roads and trails, and suitability for roads (natural surface).

Ratings in the column *hazard of erosion* (disturbed site) are based on slope and on soil erodibility K factor. Soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates erosion is unlikely under ordinary climatic conditions; *moderate* indicates some erosion is likely, and erosion-control measures may be needed; *severe* indicates erosion is very likely, and erosion-control measures, including revegetation of bare areas, are advised; and very severe indicates significant erosion is expected, loss of soil productivity and offsite damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on soil erodibility K factor, slope, and content of rock fragments. Ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates little or no erosion is likely. A rating of *moderate* indicates some erosion is likely; roads or trails may require occasional maintenance; and simple erosion-control measures are needed. A rating of *severe* indicates significant erosion is expected; roads or trails require frequent maintenance; and costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, Unified classification, depth to a water table, ponding, flooding, and hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

The table “Soil Damage by Fire, Fencing Limitations, and Soil Rutting Hazard” shows interpretive ratings related to susceptibility of the soil to damage by fire, fencing limitations, and soil rutting hazard.

Ratings in the column *susceptibility of the soil to damage by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires intense enough to remove the duff layer and consume organic matter in the surface layer.

Rating class terms for fire damage are expressed as low, moderate, and high. Where these terms are used, the numerical ratings indicate gradations between the point at which susceptibility to fire damage is highest (1.00) and the point at which susceptibility is lowest (0.00).

Rating class terms for *fencing limitations* are based on soil texture, flooding frequency, depth to bedrock, coarse fragments, shrink swell potential, slope, depth to water table, potential frost action, salinity, ponding, depth to cemented pan, and surface rock fragments. The soils are described as being very limited, limited, and not limited. Ratings indicate an evaluation of the limitation of the soil for installing fencing, typically driven, or dug, wooden or steel posts.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, Unified classification, depth to a restrictive layer,

and slope. The operation of forest equipment may cause ruts to form. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates the soil is subject to little or no rutting; *moderate* indicates rutting is likely; and *severe* indicates ruts form readily.

Agronomy

Crops and Pasture

The system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “[Detailed Soil Map Units](#).” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping soils do not include major and generally expensive landforming that would change slope, depth, or other soil characteristics, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, forestland, or engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. The unit level is not utilized in Montana. More information is available from the National Soil Survey Handbook, online at <http://soils.usda.gov/technical/handbook/contents/part622.html#02>.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use. This class does not occur in Montana.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2e. The letter

e shows the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows the chief limitation is climate that is very cold or very dry.

In class 1, there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

Prime Farmland and Other Important Farmlands

The table “Prime Farmland and Other Important Farmlands” lists the map units in the survey area that are considered prime farmland and farmland of statewide importance. This list does not constitute a recommendation for a particular land use.

Prime Farmland

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is less than frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. Detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated or maintained in a healthy state when cropped.

The extent of each listed map unit is shown in the “Acreage and Proportionate Extent of the Soils” table. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “[Detailed Soil Map Units](#).”

Farmland of Statewide Importance

Some land that does not meet the criteria for prime farmland meets the criteria for farmland of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate state agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable.

Farmland of statewide importance is included in the list of prime farmland.

Criteria are available in the Field Office Technical Guide, Section II, which is available in local offices of the Natural Resources Conservation Service and online at <http://www.nrcs.usda.gov/technical/efotg/>.

Range

For areas that have similar climate and topography, differences in kind and amount of vegetation produced are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation.

Rangeland and grazeable forestland contain ecosystems that provide forage for livestock and/or wildlife, recreational opportunities, esthetic values, scenery, minerals, and wood products and serve as watersheds. Proper management is essential for the sustainable production of food and fiber, as well as supporting this diversity of other uses.

The *National Range and Pasture Handbook* (<http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>) defines *rangeland* as land on which the Historic Climax Plant Community (HCPC) is predominantly grasses, grasslike plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially when routine management is accomplished mainly through manipulation of grazing. Rangeland includes natural grasslands, savannas, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows.

Grazeable forest understory is defined as land on which the understory includes, as an integral part of the forest plant community, plants that can be grazed without significant impairment of other forest values.

The table “Rangeland Ecological Sites and Forest Habitat Types” shows for each listed soil, the rangeland ecological site or forest habitat. Only those soils used as rangeland or grazeable forest understory, or suited as rangeland or grazeable forest understory, are listed. Explanation of the column headings in this table follows.

The *National Range and Pasture Handbook* defines *ecological site* as a distinctive kind of rangeland, with specific physical characteristics, that differs from other kinds of rangeland in its ability to produce a distinctive kind and amount of vegetation. Montana NRCS’ Ecological Site Description (ESD) naming and numbering policy is located online at <http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>.

ESDs contain information about soils, physical features, associated hydrologic features, plant communities possible on the site, plant community dynamics, annual production estimates, associated animal communities, and associated similar sites and interpretations for grazing, wildlife, watershed, recreation, and other management uses. ESDs describe the HCPC or other reference plant community for the site. ESDs are being developed for each ecological site. Approved ESDs are located at <http://esis.sc.egov.usda.gov/>.

The relationship between soils and vegetation was ascertained during this survey; thus, ecological sites are listed for components that occur in the map units, evident on the soil map. Stocking rates and management opportunities are determined by the plants and vegetative production actually growing on a specific site. This existing

plant community and production is obtained by onsite investigations performed in the planning process.

Habitat type is an aggregation of all land areas capable of producing similar climax plant communities. Habitat types are considered basic ecological subdivisions of landscapes. Each habitat type is recognized by distinctive combinations of overstory and understory plant species at climax. Habitat types are named for dominant, or characteristic, vegetation of the climax community. The habitat type and phase displayed in this table is documented in *Forest Habitat Types of Montana* (Pfister et al, 1977) for coniferous forests, *Classification and Management of Montana's Riparian and Wetland Sites* (Hansen et al., 1995) for deciduous forests, *Plant Community Classification for Alpine Vegetation on the Beaverhead National Forest, Montana* (Cooper et al. 1997) for high-elevation forested areas, and *Grassland and Shrubland Habitat Types of Western Montana* (Mueggler and Stewart, 1980) for primarily sagebrush communities.

Rangeland Management

According to the *National Range and Pasture Handbook* (<http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>), the objective in grazing land management is to provide the kind of plant community that provides for and maintains a healthy ecosystem, produces quality forage for the grazing animals, and meets the needs of the grazing land enterprise and the desires of the landowner.

Proper grazing management generally results in the optimum production of vegetation, reduction of less desirable species, conservation of water, and control of erosion. Many times a similarity to HCPC somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Rangeland landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. An ecological site is recognized and described based on the characteristics differentiating it from other sites in its ability to produce and support a characteristic plant community. Rangeland management requires knowledge of ecological sites and of the HCPC. The composition and production of the plant community present on an ecological site today may vary significantly as compared to the HCPC.

Disturbances that alter the natural plant community include repeated overuse by livestock, excessive burning, erosion, and plowing. Grazing animals select the most palatable plants within a community. These plants will eventually die if they are continually overgrazed. A severe disturbance can destroy the natural community. Under these conditions, less desirable plants, such as annuals and weeds, can invade. If the plant community has not deteriorated significantly and proper grazing management is applied, it can eventually return to dominantly natural plants.

Knowledge of ecological sites and associated HCPCs is necessary as a basis for planning and applying the management needed to maintain or improve the desired plant community. Such information is needed to determine management objectives, proper grazing systems and stocking rates, suitable wildlife management practices, potential for recreational uses, and condition of watersheds.

Grazing management is the most important part of any rangeland management program. The key elements of grazing management are to manage kind of animals, number of animals, grazing distribution, length of grazing periods, and timing of use. The goal is to provide sufficient deferment from grazing during the growing season to maintain or improve the plant community.

Special consideration is often required for sensitive areas, such as riparian areas, wetlands, and habitats of concern, in order to manage grazing and maintain adequate cover. Misuse of sensitive areas may result in deterioration of protective vegetation, reduction of streambank stability, and excessive erosion. Developing off-stream

watering locations can successfully prevent cattle from overgrazing riparian areas and encourage better livestock distribution.

Certain practices commonly are needed to obtain a uniform distribution of grazing. These practices include developing livestock watering facilities, fencing, properly locating salt and mineral supplements, constructing livestock trails in steeply sloping areas, and riding or herding.

Various kinds of grazing systems can be used in range management. No single grazing system is best under all conditions. The grazing system should increase the quantity and quality of range vegetation; meet operators' needs; and be designed according to topography, type of grazing animals, and resource management objectives.

Accelerating practices are applicable in areas where management practices alone do not achieve the desired results in a timely fashion. These practices include range seeding, brush management, weed control, prescribed burning, and mechanical treatment. Accelerating practices can be effective only when used in combination with a management system to help maintain the desired plant community.

Some soils are suited to mechanical treatment for range improvement. On other soils, however, mechanical treatment is not recommended. The "Agronomy" section defines capability classes. Capability classes are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. Many soils in capability classes 1 through 4 are suited to such practices as seeding, mechanical brush and weed control, and water spreading. Soils in capability classes 5, 6, 7, or 8 have greater, and, in some cases, insurmountable limitations. Many soils in capability classes 1 through 4 are suited to tillage for seedbed preparation before native or introduced forage plant species are seeded. Soils in capability class 6 may be suited to limited surface disturbance, such as scarification for seeding and as a means of increasing the rate of water infiltration for seed germination.

Forest Understory Management

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some forestland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the overstory community.

Forest understory production can usually be improved by reducing canopy density when combined with managing grazing stocking rates, livestock distribution, and season of use. Often both woodland and range resources benefit from thinning the overstory to canopy levels that optimize both timber and forage production. Broadcast seeding of disturbed areas soon after timber harvest with desirable range forage species can improve vegetation quantity and quality while reducing the chance of undesirable plants occupying the site.

Steepness of slopes and distance to drinking water are severe grazing management problems in many mountain and foothill areas. Variations in primary season of plant growth, production levels, and plant communities because of elevation and aspect changes present additional challenges. Long, steep slopes limit access by livestock. Less sloping areas are subject to overuse. Grazing should be delayed until the soil is firm enough to withstand trampling and plants have matured enough to withstand grazing pressure.

Riparian areas should be protected from overuse by livestock. Misuse results in deterioration of protective vegetation, reduction of stream-bank stability, and excessive erosion. Developing off-stream-watering locations can successfully prevent cattle from overgrazing riparian areas and encourage better livestock distribution.

Habitat type variations as they occur on the landscape illustrate the combined effect of aspect, slope, elevation, and soil properties on potential plant growth.

Forestland

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They rate the soils according to limitations affecting various aspects of forestland management. Ratings in the tables are in both text and numerical format.

Soil components impacted as a result of mining activities are listed as “not rated, impacted” for affected map units in forest interpretation tables where there is a high probability that these activities could result in people coming into significant contact with surface soil material.

Forestland Management

In these tables, interpretive ratings are given for various aspects of forestland management. Ratings in the tables are in both text and numerical format.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates the soil has features favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates the soil has features moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates the soil has one or more properties unfavorable for the specified management aspect. Overcoming unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate soil properties considered in rating the soils. Detailed information about criteria used in the ratings can be found in the *National Forestry Manual*, which is available in local offices of the Natural Resources Conservation Service or on the Internet (<http://soils.usda.gov/technical/nfmanual/>).

The table “Haul Roads, Log Landings, and Seedling Mortality on Forestland” shows interpretive ratings related to limitations affecting construction of haul roads and log landings, suitability for log landings, and potential for seedling mortality.

For *limitations affecting construction of haul roads and log landings*, ratings are based on slope, flooding, permafrost, plasticity index, hazard of soil slippage, content of sand, Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates no significant limitations affect construction activities; *moderate* indicates one or more limitations can cause some difficulty in construction; and *severe* indicates one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, Unified classification, depth to a water table, ponding, flooding, and hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited for use as log landings.

Ratings in the column *susceptibility to seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high susceptibility to seedling mortality.

Where these terms are used, the numerical ratings indicate gradations between the point where susceptibility is highest (1.00) and the point where susceptibility is lowest (0.00).

The table “Forestland Planting and Harvesting” shows interpretive ratings related to suitability for hand planting, suitability for mechanical planting, and suitability for use of harvesting equipment.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

The table “Forestland Site Preparation” shows interpretive ratings related to suitability for mechanical site preparation (surface) and suitability for mechanical site preparation (deep).

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Recreation

In the table described in this section, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. Ratings in the table are in both text and numerical format. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, texture of the surface layer, and susceptibility to flooding. Not considered in the ratings, but important in evaluating a site, are the area’s location and accessibility, size and shape, and scenic quality; vegetation; access to water and public sewer lines; and potential water impoundment sites. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils subject

to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of depth, duration, intensity, and frequency of flooding is essential.

The information in the “Camp Areas, Paths and Trails, and Off-road Vehicle Trails” table can be supplemented by other information in this survey, for example, interpretations for building site development and construction material potential.

Camp areas require site preparation, such as shaping and leveling tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. Soil properties that affect performance of the areas after development are those that influence trafficability and promote growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road vehicle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Engineering

This section provides information for planning land uses related to urban development and water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “[Soil Properties](#).”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to soil between the surface and a depth of 5 to 7 feet. Because of map scale, small areas of different soils may be included within mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of soils or for testing and analysis by personnel experienced in design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, site selection, and design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the soil survey fieldwork, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness,

depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

Information in the tables, along with the soil maps, soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some terms used in this soil survey have a special meaning in soil science; these terms are defined in the "[Glossary](#)."

Construction Materials

The Construction Materials tables include "Construction Material Potential" and "Potential Source of Reclamation Material, Roadfill, and Topsoil." These tables give information about soils as potential sources of gravel and sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the Construction Materials tables, only the likelihood of finding material in suitable quantity is evaluated. The suitability of material for specific purposes is not evaluated, nor are factors that affect excavation of the material. Properties used to evaluate the soil as a source of gravel or sand are gradation of grain sizes (as indicated by the Unified classification of the soil), thickness of suitable material, and content of rock fragments. If the bottom layer of soil contains gravel or sand, the soil is considered a likely source regardless of thickness. The assumption is that the gravel or sand layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good*, *fair*, or *poor* as potential sources of gravel and sand. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel or sand. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good*, *fair*, or *poor* as potential sources of reclamation material and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number is, the lesser the potential is.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. Ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on soil properties that affect erosion and surface stability, and the productive potential of the reconstructed soil. These properties include

content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments elsewhere. In this table, soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed soil layers will be mixed when soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and performance of the material after it is in place. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the American Association of State Highway and Transportation Officials (AASHTO) classification of the soil) and linear extensibility (shrink-swell potential) (AASHTO, 1986).

Topsoil is used to cover an area so vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. Ratings are based on the soil properties that affect plant growth; ease of excavating, loading, and spreading material; and reclamation of the borrow area. Toxic substances, soil reaction, and properties inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases absorption and retention of moisture and nutrients for plant growth.

Water Management

The "Ponds and Embankments" table gives information on soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. Ratings in the table are in both text and numerical format. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect storage capacity of the reservoir area.

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Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments with zoned construction (core and shell) are not considered. In this table, soils are rated as a source of material for embankment fill. Ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of water as inferred from the salinity of the soil. Depth to bedrock and content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many typically 2-meter deep excavations are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

The “Engineering Index Properties” table described in this section gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the “[Glossary](#).”

Classification (engineering) of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are

estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing sieve number is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Properties

The "Physical Properties of the Soils" table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil taxonomic and engineering classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $\frac{1}{3}$ - or $\frac{1}{10}$ -bar (33 kPa or 10 kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (K_{sat}) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of inches per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (K_{sat}) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic

matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $\frac{1}{3}$ - or $\frac{1}{10}$ -bar tension (33- or 10-kPa) moisture tension and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the *shrink-swell potential* of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion K factor indicates the susceptibility of a soil to sheet and rill erosion by water. K Factor is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values for K range from 0.02 to 0.69. Other factors being equal, the higher the K factor, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates include the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the *National Soil Survey Handbook*, which is available in local offices of the Natural Resources Conservation Service or on the Internet (<http://soils.usda.gov/technical/handbook/>).

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and calcium carbonate content. Soil moisture and frozen soil conditions also influence wind erosion.

Chemical Properties

The “Chemical Properties of the Soils” table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity retain fewer cations, resulting in lower inherent fertility than soils having a high cation-exchange capacity.

Effective cation-exchange capacity refers to the sum of exchangeable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating fertility requirements, and in determining the risk of corrosion.

Calcium-carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the elevated pH values that result from carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C (77 degrees F). Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the management of water application. Hence, the salinity of soils in individual fields can vary from the value given in the table. Salinity affects the suitability of a soil for crop production, revegetation, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, increased pH values, and a general degradation of soil structure.

Water Features

The "Water Features" table gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well-drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redox features) in the soil.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding.

Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to less than 2 days, *brief* if 2 to less than 7 days, *long* if 7 to less than 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is more than 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based in part on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development. Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods.

Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

The "Soil Features" table gives estimates of various soil features. The estimates are used in land use planning.

Restrictions are nearly continuous layers that have one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength cause damage to pavements and other rigid structures during periods of thawing.

Risk of corrosion pertains to potential soil-related electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is relative to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion.

For uncoated steel and concrete, the risk of corrosion is expressed as *low*, *moderate*, or *high*.

Formation of the Soils

This section relates the soils in the survey area to the major factors of soil formation.

Factors of Soil Formation

Soils form through weathering and other processes that act on deposited or accumulated geologic material. Although there are many different soils, the kind of soil that forms depends on the interaction of the type of parent material; the climate to which soil material has been exposed; the relief, or topology, of the land; the plant and animal life in and on the soil; and the length of time that these collective forces have interacted. These factors together are called the soil-forming factors.

The effects of climate and living organisms are conditioned by relief, which influences surface drainage; the amount of water that percolates through the soil; the rate of erosion; and the vegetation potential of the soil. The nature of the parent material also affects the nature of the soil profile that is formed. Time is needed for the climate and organisms to transform parent material into a soil. The development of a distinct soil horizon can require a long period.

The relative importance of each of these factors differs from place to place; in some areas, one factor is more important, and, in other areas, another may dominate. A modification or variation in any of the factors may result in a different kind of soil. Within short distances, the combination of these factors varies, and, consequently, the soils that form may differ in fertility, productivity, and physical and chemical characteristics. In the following paragraphs, the factors of soil formation are further discussed.

Parent Material

Parent material is the initial physical body that is changed by the other soil-forming factors over time. It strongly affects the chemical and mineralogical composition of the soil. Generally, the influence of parent material diminishes gradually as a soil develops. The nature of the parent material expresses itself clearly in the soil profile, including color, texture, and mineralogy. These properties can be related to physical and chemical properties, susceptibility to erosion, shrink-swell potential, and inherent fertility.

The major parent materials in this soil survey are alluvium, colluvium, and residuum derived from granite, limestone, sandstone, shale, and a variety of volcanic rock types, both hard and soft, along with some recent alluvium and older tertiary-aged alluvium.

Climate

Climate as expressed in air and soil temperature, soil moisture states, and precipitation is an active force in the formation of soils. Climate affects soil formation through its impact on the kind and amount of living organisms in and on the soil. Vegetation and organisms decay to produce organic matter in the soil. Soils that have cool temperatures and high moisture levels generally contain more organic matter and are darker colored. Soils that have warm temperatures and low soil moisture generally contain less organic matter and are lighter colored.

Soils form from rocks that have been weathered by erosion and alternate freezing and thawing. Chemical reactions, such as solution and hydration, further break down this weathered material.

The climate of the soil survey is relatively cold and dry to moist. The climate is highly variable across the survey area and accounts for significant differences between the soils and related vegetation. Rainfall ranges from 10 to 30 inches. Details about the climate in the soil survey area are given in the section "[General Nature of the Survey Area](#)" and are provided in Snotel precipitation tables and URL links. Map unit descriptions provide specific climate data relative to the area they represent.

Topography

Topography, or relief, is determined by mountain formation and subsequent/concurrent related erosion and glaciation and by the age and resistance of geologic formations to erosion by wind and water. Topography influences soil development through its influence on effectiveness of precipitation, drainage, and runoff. The degree of slope, aspect, shape of the land surface, and permeability of the soil determine the rate of runoff, internal drainage, and soil moisture content.

Slope aspect has an impact on soil formation and related vegetation. East- and north-facing slopes receive less intense solar radiation. As a result, the soils on these slopes remain moister longer and are cooler than soils on west- and south-facing slopes. The surface soil is darker and the depth to lime is generally deeper on north-facing slopes than on south-facing slopes. In much of the survey area, these differences are pronounced.

Living Organisms

Living organisms greatly influence the processes of soil formation and the soil characteristics. Plants, animals, insects, and microorganisms affect gains or losses in organic matter, plant nutrients in the soil, and changes in porosity and structure. The kinds and amounts of living organisms are influenced by soil-forming factors, such as climate and topography.

Roots, rodents, and insects penetrate the soil and alter its structure. The deep, fibrous root system of grasses improves the porosity and structure of the soil. Animal activity is largely concentrated in the upper layers of the soil. Because of this porosity, the activity of microbes, earthworms, and burrowing animals increases. Animals and insects, in turn, increase large channels and pores in the soil by deep burrowing, leaving open channels for the movement of water and air. The soil is continually mixed by this activity.

Plant roots create channels through which air and water move more rapidly, affecting soil structure and increasing the rate of chemical reactions. Deep roots transport minerals and plant nutrients to the surface, improving surface fertility. Under coniferous trees, needles accumulated at the surface increase the soil's acidity.

Microorganisms decompose organic matter, which releases plant nutrients and chemicals into the soil. Some organisms in the soil take in nitrogen from the air and incorporate it into plant tissues. After these organisms die, the nitrogen is released in various forms, becoming available to plants. These nutrients either are used by the plants or are leached from the soil. Human activities that influence plant and animal populations in the soil affect the rate of soil formation.

Soils under forest plant communities tend to be cooler than soils under grassland plant communities. Wet soils may have less oxygen available than better drainer soils.

The native vegetation in the soil survey area varies widely depending on elevation and precipitation. In general, the higher the elevation, the cooler and moister the climate becomes, favoring forested communities. Grassland communities occupy the lower elevations and south aspects of many of the higher elevations.

Time

The length of time parent materials have been in place and exposed to climate and living organisms is generally reflected in the degree soils have developed. If soil-forming factors have been active for a long time, horizon development is stronger than if they have been active for a relatively short time, assuming a stable landscape. Horizons are described in terms of chemistry, color, consistence, permeability, structure, texture, and thickness.

Some parent materials weather faster than others do. The rate of weathering is dependent on the mineral composition and degree of consolidation and cementation of the parent material. "Time zero" for soil formation is considered the point in time when fresh parent material is first exposed to the soil-forming factors. Examples include a flood, a change in topography resulting from a geologic event, a severe episode of erosion, or the influence of humans on the landscape.

Soils are classified according to their degree of development, an approximation, or proxy, for age, from undeveloped to very old. Age, or maturity, of a soil is generally indicated by thickness and distinctness of subsurface horizons, content of organic matter and clay, depth to which soluble material is leached, and form and distribution of calcium carbonate and gypsum in the soil.

Young soils show very little profile development. In these largely forested landscapes, young soils are typically shallow to bedrock and occur on eroding landscapes. Therefore, the parent material is continually renewed and, as a result, in place only a short time. This soil has had little chance for accumulation of organic matter, and lack of stability results in minimal clay movement within the soil. The soil profile has been little altered. The Goldflint soil is an example.

As these landscapes stabilize, as well as on more stable positions, the soils have an opportunity to begin to mature. These positions, as a result, represent an older surface. The Anaconda soil formed in parent material similar to the parent material of the Wetsand soil, but it is on a more stable landform, so the surface is older. The surface layer is darker and thicker than Goldflint soils along with a greater depth to bedrock. The Holloway soil is an example.

Mountainous soils are a mix of older and younger soils. The degree of soil development depends on landform position, stability, and composition of the parent material. The Gambler soil is an example of a mature, stable soil. It has extensive alteration of the subsoil. Fine clay particles have moved out of the surface soil and been deposited in the subsoil. Soluble minerals have leached out of the subsoil and been redeposited below the subsoil. Passage of time has effected a great deal of change in the original parent material.

Many sloping and steep, shallow, and very shallow soils have been forming for about as long as some of the more developed, less-sloping, stable soils. However, erosion has removed the soil as fast as it formed. In this case, much of the effect of time has been countered by the effect of relief.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Mollisol, from mollis, meaning soft.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Cryolls (Cry, meaning soil with a cryic, meaning cold, temperature regime, plus olls, from Mollisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Argicryolls (Argi, meaning soils with clay accumulation known as an argillic horizon, plus cryolls, the suborder of the Mollisols that has a cryic temperature regime).

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

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, superactive Ustic Argicryolls.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example is the Hungryhill series. The soils in the Hungryhill series are loamy-skeletal, mixed, superactive Ustic Argicryolls.

The "Taxonomic Classification of the Soils" table indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is included. A pedon description of a three-dimensional area of soil, that is typical of the series in the survey area is provided. The detailed description of each soil horizon follows standards in the *Soil Survey Manual* (Soil Survey Division Staff, 1993) and in the *Field Book for Describing and Sampling Soils* (Schoeneberger and others, 2002). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (Soil Survey Staff, 1999) and in *Keys to Soil Taxonomy* (Soil Survey Staff, 2003). Unless otherwise indicated, colors in the descriptions are for dry soil. A comprehensive description of the official series is available online at <http://soils.usda.gov/technical/classification/osd/index.html>.

Adel Series

Taxonomic Class: Fine-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Adel silt loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 13 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores; many worm casts; slightly acid (pH 6.1); gradual wavy boundary.
- A2—13 to 31 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; many worm casts; slightly acid (pH 6.1); diffuse wavy boundary.
- A3—31 to 38 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate very fine and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; neutral (pH 7.0); gradual wavy boundary.
- Bw—38 to 60 inches: brown (10YR 5/3) channery loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine pores; 20 percent angular gravel, 5 percent angular cobbles; neutral (pH 7.0).

Ambrant Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Lamellic Haplustepts

Typical Pedon

Ambrant gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—2 inches to 0; undecomposed and slightly decomposed forest litter.
- E1—0 to 4 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine pores; 25 percent gravel; neutral (pH 7.2); clear wavy boundary.
- E2—4 to 20 inches; light brownish gray (2.5Y 6/2) gravelly coarse sandy loam, grayish brown (2.5Y 5/2) moist; strong fine granular structure; soft, very friable, nonsticky

and nonplastic; common very fine and fine roots; common very fine pores; 25 percent gravel; neutral (pH 7.2); gradual wavy boundary.

E and Bt—20 to 39 inches; E part (75 percent) is light brownish gray (2.5Y 6/2) gravelly coarse sandy loam, dark grayish brown (2.5Y 4/2) moist; Bt part (25 percent) is dark grayish brown (2.5Y 4/2) gravelly sandy loam lamellae, very dark grayish brown (2.5Y 3/2) moist; lamellae are 0.13- to 0.39-inches thick; texture mixed is gravelly coarse sandy loam; weak fine and medium blocky structure parting to moderate fine and medium granular; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine pores; 30 percent gravel; neutral (pH 7.2); gradual wavy boundary.

2C—39 to 60 inches; light brownish gray (2.5Y 6/2) very gravelly coarse sand, grayish brown (2.5Y 5/2) moist; single grain; slightly hard, very friable, nonsticky and nonplastic; 55 percent gravel; neutral (pH 7.2).

Arrowpeak Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Arrowpeak very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; strong fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few surface stones, 30 percent cobbles, 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw—8 to 17 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular and irregular pores; 30 percent cobbles, 40 percent gravel; neutral (pH 6.6); clear wavy boundary.

R—17 to 60 inches; hard, fractured igneous bedrock.

Ashbray Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, nonacid, frigid Lithic Ustorthents

Typical Pedon

Ashbray gravelly coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

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

A—0 to 4 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and common fine interstitial pores; 30 percent gravel; neutral (pH 6.8); clear smooth boundary.

C—4 to 14 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; 50 percent gravel; neutral (pH 7.2); clear wavy boundary.

Cr—14 to 17 inches; yellowish brown (10YR 5/4) decomposed granitic bedrock (grus) that crushes to very gravelly coarse sand; neutral (pH 6.8).

R—17 to 60 inches; hard granite bedrock.

Baggs Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Baggs loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 10 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine irregular pores; neutral (pH 6.6); clear smooth boundary.
- Bw1—10 to 16 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine tubular pores; neutral (pH 6.8); clear smooth boundary.
- Bw2—16 to 22 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; neutral (pH 6.8); clear wavy boundary.
- BC—22 to 31 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; neutral (pH 7.0); gradual wavy boundary.
- C—31 to 60 inches; light brown (7.5YR 6/4) fine sandy loam, strong brown (7.5YR 4/6) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; neutral (pH 7.2).

Bandy Series

Taxonomic Class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Endoaquolls

Typical Pedon

Bandy loam (Colors are for moist soil unless otherwise noted.)

- Ap—0 to 7 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common fine tubular pores; slightly alkaline (pH 7.6); clear smooth boundary.
- Bw1—7 to 10 inches; very dark grayish brown (10YR 3/2) sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bw2—10 to 14 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; few fine faint yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine irregular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.
- 2C—14 to 60 inches; grayish brown (10YR 5/2) very gravelly sand, brown (10YR 5/3) dry; few fine faint yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) dry redox concentrations; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; 10 percent cobbles, 40 percent gravel; neutral (pH 7.2).

Basincreek Series

Taxonomic Class: Coarse-loamy, mixed, superactive Lamellic Haplocrypts

Typical Pedon

Basincreek gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; forest litter layer of slightly decomposed conifer needles and twigs.
- E1—2 to 6 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, dark grayish brown (10YR 4/2) moist; weak medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine, fine, and medium and common coarse roots; 15 percent fine subangular gravel; moderately acid (pH 6.0); gradual smooth boundary.
- E2—6 to 20 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam; dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium and few coarse roots; 15 percent fine subangular gravel; moderately acid (pH 6.0); gradual smooth boundary.
- E and Bw1—20 to 28 inches; E part (90 percent) pale brown (10YR 6/3) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; B part (10 percent) brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium and coarse roots; 20 percent fine subangular gravel; slightly acid (pH 6.2); gradual wavy boundary.
- E and Bw2—28 to 37 inches; E part (70 percent) is light yellowish brown (2.5Y 6/3) gravelly loamy coarse sand, grayish brown (2.5Y 5/2) moist; B part (30 percent) is brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; E part is soft, very friable, nonsticky and nonplastic; B part is moderately hard, firm, slightly sticky and slightly plastic; few fine, medium, and coarse roots; 25 percent fine subangular gravel; neutral (pH 6.8); gradual wavy boundary.
- BC—37 to 46 inches; light yellowish brown (2.5Y 6/3) gravelly loamy coarse sand, light olive brown (2.5Y 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots; many interstitial pores; 25 percent fine subangular gravel; neutral (pH 6.8); abrupt wavy boundary.
- R—46 to 60 inches; hard granite bedrock.

Bata Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Glossocryalfs

Typical Pedon

Bata gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.
- Bw—2 to 11 inches; brown (7.5YR 5/4) gravelly ashy silt loam, brown (7.5YR 4/4) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 15 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- 2E/Bt—11 to 22 inches; E part (70 percent) is pinkish gray (7.5YR 7/2) gravelly loam, pinkish gray (7.5YR 6/2) moist interfingering into B part; B part (30 percent) is pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; texture mixed is gravelly loam; weak medium subangular blocky structure; slightly hard, very friable, nonsticky

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and nonplastic; many fine and medium roots; many fine pores; 30 percent gravel; moderately acid (pH 5.7); clear wavy boundary.

2Bt1—22 to 38 inches; pink (7.5YR 7/4) very gravelly clay loam, brown (7.5YR 5/4) moist; moderate fine and medium subangular blocky structure; very hard, firm, slightly sticky and moderately plastic; few fine roots; common fine pores; few distinct clay films on faces of peds and lining pores; 40 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2Bt2—38 to 60 inches; light brown (7.5YR 6/4) very gravelly clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; very hard, firm, slightly sticky and moderately plastic; few fine roots; common fine pores; continuous prominent clay films on faces of peds and lining pores; 10 percent cobbles, 35 percent gravel; slightly acid (pH 6.2).

Bavdark Series

Taxonomic Class: Fine-loamy, mixed, superactive Pachic Argicryolls

Typical Pedon

Bavdark coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; dark gray (10YR 4/1) coarse sandy loam, black (10YR 2/1) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and common fine and medium pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

AB—10 to 18 inches; dark gray (10YR 4/1) sandy clay loam, black (10YR 3/1) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine, common fine, and few medium pores; 5 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bt1—18 to 30 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, very friable, moderately sticky and moderately plastic; few very fine, fine, and medium roots; many very fine, common fine, and few medium pores; common faint clay films on faces of peds and lining pores; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt2—30 to 42 inches; brown (10YR 5/3) sandy clay loam, very dark grayish brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, very friable, moderately sticky and slightly plastic; few very fine, fine, and medium roots; many very fine, common fine, and few medium pores; common faint clay films on faces of peds and lining pores; 5 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

C—42 to 60 inches; brown (10YR 5/3) coarse sandy loam; brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine, common fine, and few medium pores; 10 percent gravel; slightly acid (pH 6.2).

Baxton Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Baxton coarse sandy loam (Colors are for dry soil unless otherwise noted.)

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- A—0 to 11 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine, medium, and coarse roots; many very fine and fine pores; 10 percent gravel; neutral (pH 6.8); clear smooth boundary.
- Bw1—11 to 22 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine, medium, and coarse roots; common very fine and fine pores; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bw2—22 to 31 inches; light yellowish brown (10YR 6/4) gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine, medium, and coarse roots; common very fine and fine pores; 30 percent gravel; neutral (pH 7.3); clear wavy boundary.
- Cr—31 to 57 inches; reddish yellow (7.5YR 6/6) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand.
- R—57 to 60 inches; hard granite bedrock.

Bearmouth Series

Taxonomic Class: Sandy-skeletal, mixed Ustic Haplocryolls

Typical Pedon

Bearmouth cobbly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; dark gray (10YR 4/1) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; 20 percent cobbles, 5 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Bw1—4 to 9 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; 15 percent cobbles, 40 percent gravel; neutral (pH 6.8); gradual wavy boundary.
- Bw2—9 to 14 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 15 percent cobbles, 40 percent gravel; neutral (pH 6.8); gradual wavy boundary.
- 2C—14 to 60 inches; brown (10YR 5/3) extremely cobbly sand, dark grayish brown (10YR 4/2) moist; single grain; loose; 50 percent cobbles, 20 percent gravel; few lime coats on undersides of some rock fragments at depths greater than 22 inches; slightly alkaline (pH 7.8).

Beeftail Series

Taxonomic Class: Sandy, mixed Ustic Haplocryolls

Typical Pedon

Beeftail coarse sandy loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 3 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; 10 percent, mainly fine, gravel; moderately acid (pH 5.8); clear smooth boundary.

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A2—3 to 8 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; few very fine and fine tubular pores; 10 percent, mainly fine, gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw—8 to 14 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium or coarse subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; few very fine tubular pores; 20 percent, mainly fine, gravel; slightly acid (pH 6.4); gradual wavy boundary.

BC—14 to 26 inches; pale brown (10YR 6/3) gravelly loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and common fine and medium interstitial pores; 30 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

Cr—26 to 35 inches; soft, weathered granite bedrock.

R—35 to 60 inches; hard granite bedrock.

Bielenberg Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Bielenberg sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 3 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—3 to 9 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine pores; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

BA—9 to 15 inches; brown (10YR 4/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and common fine pores; 10 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bt—15 to 28 inches; yellowish brown (10YR 5/4) coarse sandy clay loam, brown (10YR 4/3) moist; strong medium prismatic structure; hard, firm, moderately sticky and moderately plastic; few very fine, fine, and medium roots; common very fine and fine pores; few faint clay films on faces of peds; 10 percent gravel; neutral (pH 6.6); gradual wavy boundary.

BC—28 to 50 inches; light yellowish brown (10YR 6/4) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and few fine pores; 5 percent cobbles, 25 percent gravel; neutral (pH 6.8); gradual irregular boundary.

Cr—50 to 55 inches; yellowish brown (10YR 5/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand or coarse loamy sand.

R—55 to 60 inches; hard granite bedrock.

Bigbutte Series

Taxonomic Class: Ashy, glassy Vitrandic Haplocryolls

Typical Pedon

Bigbutte gravelly ashy sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial and irregular pores; 15 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bw—9 to 18 inches; brown (10YR 5/3) gravelly ashy sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; common fine irregular pores; 20 percent gravel; neutral (pH 6.6); gradual wavy boundary.

BC—18 to 27 inches; light brownish gray (10YR 6/2) gravelly ashy coarse sandy loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; common fine irregular pores; 30 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

Cr—27 to 32 inches; weakly cemented tuffaceous rhyolite.

R—32 to 60 inches; indurated tuffaceous rhyolite.

Bignell Series

Taxonomic Class: Clayey-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Bignell gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E—2 to 13 inches; pinkish gray (7.5YR 7/2) gravelly loam, pinkish gray (7.5YR 6/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine pores; 20 percent gravel; strongly acid (pH 5.5); abrupt wavy boundary.

E/Bt—13 to 17 inches; E part (80 percent) is pinkish gray (7.5YR 7/2) very gravelly loam, pinkish gray (7.5YR 6/2) moist tongues; B part (20 percent) is pinkish gray (7.5YR 6/2) very gravelly clay loam, brown (7.5YR 5/2) moist; texture mixed is very gravelly loam; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine pores; 45 percent gravel; strongly acid (pH 5.5); gradual wavy boundary.

Bt1—17 to 37 inches; light brown (7.5YR 6/4) very gravelly clay, brown (7.5YR 5/4) moist; strong fine and medium angular blocky structure; very hard, firm, moderately sticky and very plastic; few very fine, fine, medium, and coarse roots; common very fine and fine pores; common distinct clay films on faces of peds; common distinct clay films on gravel; 45 percent gravel; strongly acid (pH 5.5); clear wavy boundary.

Bt2—37 to 60 inches; light brown (7.5YR 6/4) very gravelly clay, strong brown (7.5YR 5/6) moist; strong fine and medium angular blocky structure; very hard, firm, moderately sticky and very plastic; few very fine, fine, medium, and coarse roots; few very fine and fine pores; reddish yellow (7.5YR 7/8) and brown (7.5YR 5/4) moist; common distinct clay films on faces of peds; common distinct clay films on surfaces of gravel; 45 percent gravel; moderately acid (pH 6.0).

Blacklead Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lamellic Haplocrypts

Typical Pedon

Blacklead gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, very friable; many fine roots; 20 percent gravel; noncalcareous; clear wavy boundary.
- A&B1—4 to 14 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; loam lamellae 1/4-inch thick and 4 inches apart; 35 percent gravel; noncalcareous; clear wavy boundary.
- A&B2—14 to 26 inches; reddish yellow (7.5YR 6/6) extremely gravelly loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; loam lamellae as in above horizon; 65 percent gravel; noncalcareous; clear wavy boundary.
- C—26 to 60 inches; yellow (10YR 7/6) extremely gravelly sandy loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 75 percent gravel; many gravel are subangular partially weathered granitic rock fragments; noncalcareous.

Blaincreek Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Blaincreek gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; weak very thin platy structure parting to weak very fine granular; soft, very friable, moderately sticky and slightly plastic; many very fine roots; 25 percent angular and rounded gravel; neutral (pH 6.6); clear smooth boundary.
- Bt1—4 to 12 inches; brown (7.5YR 4/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; continuous distinct clay films on faces of peds; 30 percent angular and rounded gravel; neutral (pH 6.8); gradual smooth boundary.
- Bt2—12 to 24 inches; brown (7.5YR 5/2) very gravelly loam, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; many distinct dark brown (7.5YR 3/4) clay films on faces of peds; 50 percent angular and rounded gravel; neutral (pH 7.2); clear smooth boundary.
- R—24 to 60 inches; fractured igneous bedrock, few cracks, few very fine roots in some cracks; continuous faint lime coats on undersides of rock fractures.

Blossberg Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Endoaquolls

Typical Pedon

Blossberg loam (Colors are for moist soil unless otherwise noted.)

A—0 to 14 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; many large prominent yellowish brown (10YR 5/6) redox concentrations, dry; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine and fine irregular pores; neutral (pH 7.2); clear smooth boundary.

Bg1—14 to 23 inches; dark grayish brown (2.5Y 4/2) loam, grayish brown (2.5Y 5/2) dry; many coarse prominent yellowish brown (10YR 5/8) redox concentrations, dry; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; many very fine roots; many very fine and fine irregular pores; 5 percent cobbles; slightly alkaline (pH 7.6); gradual smooth boundary.

Bg2—23 to 28 inches; grayish brown (2.5Y 5/2) gravelly loam, light brownish gray (2.5Y 6/2) dry; few fine prominent red (2.5YR 5/8) redox concentrations, dry; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine irregular pores; 5 percent cobbles, 20 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

2Cg—28 to 60 inches; dark grayish brown (10YR 4/2) very cobbly loamy coarse sand, light brownish gray (10YR 6/2) dry; common coarse prominent red (2.5YR 5/8) redox concentrations, dry; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine irregular pores; 35 percent cobbles, 20 percent gravel; slightly alkaline (pH 7.6).

Bobovic Series

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryepts

Typical Pedon

Bobovic gravelly coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—1 to 0 inches; partially decomposed needles, twigs, and leaves.

A—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 20 percent gravel; neutral (pH 7.0); clear smooth boundary.

E—3 to 11 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, dark grayish brown (10YR 4/2) moist; moderate thick platy structure parting to weak fine angular blocky; soft, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and few fine interstitial and tubular pores; 25 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bw—11 to 21 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and few fine interstitial and tubular pores; 25 percent gravel; neutral (pH 7.0); clear wavy boundary.

Cr—21 to 34 inches; light brownish gray (10YR 6/2) decomposed granite bedrock (grus) that crushes to gravelly loamy coarse sand; neutral (pH 7.2); gradual wavy boundary.

R—34 to 60 inches; hard granite bedrock.

Boxwell Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Aridic Haplustolls

Typical Pedon

Boxwell silt loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 5 inches; grayish brown (2.5Y 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine interstitial pores; neutral (pH 7.0); abrupt smooth boundary.

Bw1—5 to 9 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, friable, moderately sticky and moderately plastic; coats of dark grayish brown (10YR 4/2); common fine roots; common fine tubular pores; neutral (pH 7.2); clear smooth boundary.

Bw2—9 to 14 inches; grayish brown (2.5Y 5/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure; slightly hard, very friable, moderately sticky and moderately plastic; common fine roots; common fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—14 to 28 inches; white (5Y 8/2) silt loam, light gray (5Y 7/2) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; common fine pores; many fine masses of lime; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Cr—28 to 60 inches; light gray (5Y 7/2) semiconsolidated sandstone that crushes to a sandy loam, light olive gray (5Y 6/2) moist; upper part strongly effervescent.

Branham Series

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Branham coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; grayish brown (10YR 5/2) coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; 10 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine pores; 10 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Bw—4 to 22 inches; brown (10YR 5/3) gravelly coarse sandy loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; many very fine and fine pores; few thin clay films bridging sand grains; 25 percent gravel; neutral (pH 7.1); clear smooth boundary.

BC—22 to 30 inches; very pale brown (10YR 7/3) and white (10YR 8/2), dry or moist; gravelly coarse sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 30 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

R—30 to 60 inches; granite bedrock.

Braziel Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Typical Pedon

Braziel gravelly loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 5 percent cobbles, 15 percent gravel; neutral (pH 7.0); clear smooth boundary.
- A2—4 to 8 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and common fine tubular pores; 5 percent cobbles, 15 percent gravel; neutral (pH 7.2); clear smooth boundary.
- Bt1—8 to 17 inches; dark grayish brown (10YR 4/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and common medium roots; many very fine discontinuous tubular pores; few faint clay films on faces of peds and lining pores; 5 percent cobbles, 30 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Bt2—17 to 23 inches; brown (10YR 5/3) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and common medium roots; many very fine and fine continuous tubular pores; common distinct clay films on faces of peds and lining pores; 5 percent cobbles, 35 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bt3—23 to 43 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine continuous tubular pores; common distinct clay films on faces of peds and lining pores; 10 percent cobbles, 40 percent gravel; neutral (pH 7.2); clear smooth boundary.
- BC—43 to 60 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular continuous pores; 10 percent stones, 10 percent cobbles, 45 percent gravel; neutral (pH 7.2).

Breton Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Pachic Haplustolls

Typical Pedon

Breton loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel; neutral (pH 6.6); clear wavy boundary.
- A2—4 to 12 inches; very dark gray (10YR 3/1) gravelly loam, black (10YR 2/1) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 15 percent gravel; neutral (pH 7.0); gradual wavy boundary.
- Bw—12 to 26 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to weak

medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 20 percent gravel; slightly alkaline (pH 7.4); gradual irregular boundary.
BC—26 to 60 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 25 percent gravel; slightly alkaline (pH 7.6).

Brickner Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustalfs

Typical Pedon

Brickner gravelly sandy clay loam, stony (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inches; partially decomposed needles, twigs, and leaves.

A—0.5 to 3 inches; brown (10YR 4/3) gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 25 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt—3 to 8 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and few medium roots; common very fine and fine interstitial and tubular pores; common faint brown (10YR 4/3) clay films on faces of peds and bridging sand grains; 5 percent cobbles, 35 percent gravel; moderately acid (pH 6.0).

BC—8 to 12 inches; yellowish brown (10YR 5/4) extremely gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine, fine, and few medium roots; 15 percent cobbles, 55 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

R—12 to 60 inches; hard fractured sandstone.

Bridger Series

Taxonomic Class: Fine, mixed, superactive Ustic Argicryolls

Typical Pedon

Bridger loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 1 percent stones below surface, 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bt—9 to 24 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong coarse fine and medium blocky; very hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine pores; distinct continuous very dark grayish brown (10YR 3/2) moist; clay films on faces of peds; 1 percent stones, 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bk1—24 to 36 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine pores; 5 percent cobbles, 15 percent gravel; few large masses of

lime; continuous distinct lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—36 to 60 inches, light yellowish brown (2.5Y 6/3) gravelly loam, light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine pores; 5 percent cobbles, 20 percent gravel; common distinct lime casts on undersides of rock fragments mainly in the upper part of the horizon; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

Bronec Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Calcustepts

Typical Pedon

Bronec gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; 15 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—2 to 9 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; 25 percent gravel; disseminated lime, few fine masses and threads of lime, common faint lime coats on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—9 to 21 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; hard, friable, moderately sticky and slightly plastic; few very fine and fine roots; common very fine and fine pores; 30 percent gravel; disseminated lime, common fine masses and threads of lime, common distinct lime coats on gravel; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bk3—21 to 35 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine pores; 45 percent gravel; disseminated lime, common fine masses and threads of lime, common distinct lime coats on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk4—35 to 48 inches; pale brown (10YR 6/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; 45 percent gravel; disseminated lime, few faint lime coats on undersides of gravel; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

BC—48 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; 40 percent gravel; few faint lime coats on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.0).

Browngulch Series

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Browngulch sandy loam (Colors are for dry soil unless otherwise noted.)

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- A1—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 8 percent gravel; moderately acid (pH 6.0); clear smooth boundary.
- A2—6 to 12 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 15 percent gravel; slightly acid (pH 6.4); clear smooth boundary.
- A3—12 to 20 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 20 percent gravel; neutral (pH 6.8); abrupt wavy boundary.
- Bw—20 to 33 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; firm, slightly hard, slightly sticky and slightly plastic; many very fine and common fine roots; common fine irregular pores; 25 percent gravel; neutral (pH 6.8); abrupt wavy boundary.
- C—33 to 60 inches; brown (10YR 5/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; firm, hard, nonsticky and nonplastic; few fine roots; common fine irregular pores; 30 percent gravel; neutral (pH 6.8).

Bullrey Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Bullrey very gravelly loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 4 inches; dark grayish brown (10YR 4/2) very channeled loam, very dark brown (10YR 2/2) moist; weak very thin platy and weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; many very fine interstitial pores; 40 to 50 percent of surface covered by angular gravel and channers; strongly acid (pH 5.5); clear wavy boundary.
- A2—4 to 9 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and few medium roots; many very fine tubular pores; 45 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.
- Bw1—9 to 14 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist (rubbed); weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many very fine tubular pores; common thin clay films in pores and root channels; 50 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.
- Bw2—14 to 22 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few fine pores; 55 percent coarse gravel; moderately acid (pH 5.7); clear wavy boundary.
- C1—22 to 26 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; very weak medium and thick platy and weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many very fine tubular pores; common speckling of uncoated (bleached) sand grains; 35 percent coarse gravel; moderately acid (pH 5.7); clear irregular boundary.

- C2—26 to 48 inches; light gray (10YR 7/2) gravelly sandy loam, brown (10YR 5/3) moist; common fine distinct light yellowish brown (10YR 6/4) streaks and mottles, yellowish brown (10YR 5/4) moist; weak thick platy structure; hard, firm (brittle); few fine, medium, and coarse roots; many very fine tubular pores; 3 percent flagstones, 20 percent gravel; strongly acid (pH 5.5); clear irregular boundary.
- C3—48 to 60 inches; light gray (10YR 7/2) extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm; few fine roots; few very fine pores; 10 percent flagstones, 60 to 70 percent gravel; strongly acid (pH 5.5).

Burtoner Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Burtoner sandy clay loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 8 inches; grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 10 percent gravel; neutral (pH 7.3); clear smooth boundary.
- Bt1—8 to 14 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and common faint clay films on faces of peds; 10 percent gravel; slightly alkaline (pH 7.5); clear wavy boundary.
- Bt2—14 to 23 inches; yellowish brown (10YR 5/4) sandy clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and common faint clay films on faces of peds; 10 percent gravel; neutral (pH 7.3); clear wavy boundary.
- Cr—23 to 28 inches; light brownish gray (2.5Y 6/2) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; slightly alkaline (pH 7.4).
- R—28 to 60 inches; hard granite bedrock.

Bushong Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, frigid Aeric Endoaquents

Typical Pedon

Bushong loam (Colors are for moist soil unless otherwise noted.)

- Oi—1 inch to 0; partially decomposed organic matter.
- A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common very fine and fine discontinuous irregular pores; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bw—2 to 4 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic;

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many very fine and fine and common medium roots; common very fine and fine discontinuous irregular pores; few fine faint dark yellowish brown (10YR 4/4) redox concentrations; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—4 to 15 inches; brown (10YR 4/3) gravelly loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine and fine discontinuous irregular pores; many fine distinct brown (7.5YR 4/4) redox concentrations; 10 percent cobbles, 20 percent gravel; disseminated lime; few fine masses of lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C—15 to 60 inches; brown (10YR 5/3) very cobbly sand, pale brown (10YR 6/3) dry; single grain; loose, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine discontinuous irregular pores; many medium distinct brown (10YR 4/4) redox concentrations; 30 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.8); gradual wavy boundary.

Cabbart Series

Taxonomic Class: Loamy, mixed, superactive, calcareous, frigid, shallow Aridic Ustorthents

Typical Pedon

Cabbart loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—3 to 7 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; weak medium prismatic structure; hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—7 to 16 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; weak coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; common fine masses of lime; strongly effervescent; moderately alkaline (8.4); clear wavy boundary.

BC—16 to 18 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; weak coarse prismatic structure; very hard, friable, slightly sticky and slightly plastic; many fine roots and pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cr—18 to 60 inches; pale yellow (5Y 7/4) semiconsolidated loamy sedimentary beds that crush to loam; few widely spaced vertical cracks in upper 4 to 6 inches with roots; root mat at contact of beds.

Canarway Series

Taxonomic Class: Sandy-skeletal, mixed, frigid Aeric Fluvaquents

Typical Pedon

Canarway gravelly sandy loam (Colors are for moist soil unless otherwise noted.)

Oe—2 inches to 0; partially decomposed organic matter.

Soil Survey of Deerlodge National Forest Area, Montana

- A—0 to 4 inches; very dark gray (10YR 3/1) gravelly sandy loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine and fine tubular pores; 20 percent gravel; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C1—4 to 8 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common very fine tubular pores; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C2—8 to 10 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine tubular pores; 20 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- 2C3—10 to 60 inches; dark grayish brown (10YR 4/2) very gravelly sand, grayish brown (10YR 5/2) dry; many fine faint yellowish brown (10YR 5/6) redox concentrations; single grain; loose, nonsticky and nonplastic; few fine roots; 20 percent cobbles, 35 percent gravel; slightly alkaline (pH 7.6).

Caseypeak Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocrypts

Typical Pedon

Caseypeak gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1.5 inches; partially decomposed needles, twigs, and leaves.
- E—1.5 to 6 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, brown (10YR 5/3) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine and few medium pores; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.
- Bw1—6 to 12 inches; brown (10YR 5/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine and few fine tubular and interstitial pores; 40 percent gravel; neutral (pH 6.6); gradual wavy boundary.
- Bw2—12 to 17 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; many very fine and few fine tubular and interstitial pores; 40 percent gravel; neutral (pH 6.7); clear wavy boundary.
- Cr—17 to 20 inches; light yellowish brown (2.5Y 6/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 6.8).
- R—20 to 60 inches; hard granite bedrock.

Catgulch Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Typical Pedon

Catgulch sandy clay loam (Colors are for dry soil unless otherwise noted.)

Soil Survey of Deerlodge National Forest Area, Montana

- A—0 to 5 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and common fine interstitial pores; 10 percent gravel; slightly acid (pH 6.5); clear smooth boundary.
- Bw1—5 to 9 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine pores; 35 percent gravel; neutral (pH 6.6); clear smooth boundary.
- Bw2—9 to 12 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine and fine pores; 45 percent gravel; slightly acid (pH 6.5); abrupt smooth boundary.
- Cr—12 to 15 inches; yellowish brown (10YR 5/4) decomposed granitic bedrock that crushes to very gravelly loamy coarse sand; neutral (pH 6.8).
- R—15 to 60 inches; hard granite bedrock.

Cheadle Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Cheadle channery loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 7 inches; dark grayish brown (10YR 4/2) channery loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 25 percent channers; neutral (pH 6.6); clear wavy boundary.
- A2—7 to 15 inches; brown (10YR 4/3) extremely channery loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 55 percent channers, 10 percent gravel; pockets of disseminated lime and lime coats on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.
- Bk—15 to 19 inches; light yellowish brown (10YR 6/4) extremely channery loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots in mats between rock fragments; 20 percent gravel, 55 percent channers; disseminated lime, continuous faint lime coats on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
- R—19 to 60 inches; very pale brown (10YR 7/3) fractured hard sandstone.

Clancy Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Clancy sandy clay loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 8 inches; dark brown (10YR 3/3) sandy clay loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

- Bt1—8 to 15 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and on faces of peds; 20 percent gravel; neutral (pH 6.9); clear smooth boundary.
- Bt2—15 to 22 inches; light olive brown (2.5Y 5/4) gravelly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; common faint clay films bridging sand grains and on faces of peds; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.
- BC—22 to 30 inches; olive brown (2.5Y 4/4) gravelly coarse sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular and interstitial pores; 30 percent gravel; neutral (pH 6.6); clear irregular boundary.
- Cr—30 to 55 inches; olive gray (5Y 5/2) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 7.2).
- R—55 to 60 inches; hard granite bedrock.

Clasoil Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Clasoil gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

- A1—0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and fine interstitial pores; 5 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.
- A2—5 to 13 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and common fine pores; 5 percent cobbles, 25 percent gravel; slightly acid (pH 6.2); clear smooth boundary.
- Bt1—13 to 24 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, moderately sticky and moderately plastic; common very fine and few fine and medium roots; common very fine and fine pores; common thin clay films on faces of peds and bridging sand grains; 5 percent cobbles, 15 percent gravel; neutral (pH 6.7); clear smooth boundary.
- Bt2—24 to 34 inches; light yellowish brown (2.5Y 6/4) cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine pores; common thin clay films on faces of peds and bridging sand grains; 20 percent cobbles, 10 percent gravel; neutral (pH 6.7); clear smooth boundary.
- BC—34 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure;

slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; 25 percent cobbles, 15 percent gravel; neutral (pH 6.6).

Clugulch Series

Taxonomic Class: Loamy, mixed, superactive Lithic Haplocryepts

Typical Pedon

Clugulch sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 inches to 2; partially decomposed twigs, needles, bark, and lichens.

A—2 to 5 inches; dark grayish brown (10YR 4/2) sandy loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, nonsticky and moderately plastic; few very fine and fine roots; many very fine pores; 5 percent gravel; neutral (pH 6.7); clear wavy boundary.

Bw—5 to 9 inches; light brownish gray (10YR 6/2) coarse sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few very fine pores; 10 percent gravel; slightly acid (pH 6.5); abrupt wavy boundary.

R—9 to 60 inches; hard granite bedrock.

Clunton Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Fluvaquentic Endoaquolls

Typical Pedon

Clunton mucky peat (Colors are for moist soil unless otherwise noted.)

Oe—4 to 0 inches; very dark gray (5Y 3/1) mucky peat, very dark gray (5Y 3/1) dry; neutral (pH 6.8); clear smooth boundary.

Ag—0 to 14 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; many distinct black (5Y 2.5/1) redox depletions; few faint strong brown (7.5YR 5/6) redox concentrations; moderate medium prismatic structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine and fine interstitial pores; neutral (pH 7.0); abrupt smooth boundary.

Cg1—14 to 26 inches; very dark gray (5Y 3/1) silty clay loam, dark gray (5Y 4/1) dry; common faint very dark gray (5Y 3/1) redox depletions; many distinct strong brown (7.5YR 5/6) redox concentrations; massive; hard, firm, moderately sticky and moderately plastic; common very fine roots; few very fine tubular pores; neutral (pH 7.2); clear wavy boundary.

Cg2—26 to 30 inches; very dark gray (5Y 3/1) loam consisting of strata of loam and sandy loam, dark gray (5Y 4/1) dry; common distinct strong brown (7.5YR 5/6) redox concentrations; common faint very dark gray (5Y 3/1) redox depletions; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; neutral (pH 7.2); gradual wavy boundary.

Cg3—30 to 38 inches; dark gray (5Y 4/1) silty clay loam consisting of strata of silty clay loam and sandy loam, gray (5Y 5/1) dry; common distinct strong brown (7.5YR 5/6) redox concentrations; common faint very dark gray (5Y 3/1) redox depletions; massive; slightly hard, friable, slightly sticky and slightly plastic; neutral (pH 7.0); gradual wavy boundary.

2Cg4—38 to 60 inches; dark gray (10YR 4/1) gravelly sandy loam, grayish brown (2.5Y 5/2) dry; many distinct strong brown (7.5YR 5/6) redox concentrations;

few faint very dark gray (5Y 3/1) redox depletions; massive; slightly hard, friable, slightly sticky and nonplastic; 15 percent gravel; neutral (pH 7.0).

Comad Series

Taxonomic Class: Sandy-skeletal, mixed Lamellic Cryorthents

Typical Pedon

Comad extremely stony sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.

E1—3 to 8 inches; light brownish gray (10YR 6/2) extremely stony sandy loam, brown (10YR 5/3) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; 30 percent stones, 25 percent cobbles, 15 percent gravel; strongly acid (pH 5.4); clear smooth boundary.

E2—8 to 20 inches; very pale brown (10YR 7/3) extremely stony loamy sand, brown (10YR 5/3) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and few medium roots; many very fine tubular and interstitial pores; 30 percent stones, 25 percent cobbles, 15 percent gravel; strongly acid (pH 5.3); gradual wavy boundary.

E and Bt1—20 to 33 inches; E part (90 percent) is very pale brown (10YR 7/3) extremely stony loamy sand, yellowish brown (10YR 5/4) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; Bt part (10 percent) is yellowish brown (10YR 5/4) sandy clay loam lamellae; hard, friable, slightly sticky and slightly plastic; lamellae are wavy and discontinuous, 1/8- to 1/2-inch thick, and 2 to 6 inches apart; common very fine and fine and few medium roots; many very fine tubular and interstitial pores; 30 percent stones, 25 percent cobbles, 20 percent gravel; moderately acid (pH 5.7); gradual smooth boundary.

E and Bt2—33 to 60 inches; E part (95 percent) is very pale brown (10YR 7/4) extremely stony loamy sand, yellowish brown (10YR 5/6) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few fine and medium roots; few very fine tubular pores; Bt2 part (5 percent) is dark yellowish brown (10YR 4/4) moist sandy loam lamellae; 35 percent stones, 30 percent cobbles, 15 percent gravel; moderately acid (pH 5.7).

Cometcrik Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Cometcrik loam (Colors are for moist soil unless otherwise noted.)

A—0 to 12 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; moderate fine granular structure; hard, very friable, moderately sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine pores; neutral (pH 6.8); gradual smooth boundary.

Bw—12 to 24 inches; black (10YR 2/1) loam, very dark grayish brown (10YR 3/2) dry; few fine distinct yellowish red (5YR 4/6) dry, redox concentrations; weak medium subangular blocky structure; very hard, very friable, moderately sticky and slightly plastic; many very fine and common fine and medium roots; many very fine and common fine pores; neutral (pH 6.8); clear smooth boundary.

Cg—24 to 42 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (2.5Y 5/2) dry; common fine distinct yellowish red (5YR 4/6) dry, redox concentrations;

massive; extremely hard, firm, very sticky and moderately plastic; few very fine and fine roots; few very fine and fine pores; 5 percent gravel; neutral (pH 7.0); gradual wavy boundary.

2Cg—42 to 58 inches; brown (10YR 5/3) gravelly loamy coarse sand, pale brown (10YR 6/3) dry; massive; hard, very friable, nonsticky and nonplastic; 30 percent gravel; neutral (pH 7.0); clear wavy boundary.

3Cg—58 to 60 inches; dark gray (10YR 4/1) loam consisting of fine strata of very fine sandy loam and silty clay loam, grayish brown (10YR 5/2) dry; common medium distinct strong brown (7.5YR 5/6) dry, redox concentrations; massive; very hard, friable, moderately sticky and slightly plastic; 5 percent gravel; neutral (pH 7.0).

Como Series Family

Taxonomic Class: Sandy-skeletal, mixed Typic Haplocryepts

Typical Pedon

Como gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 inches to 1; partially decomposed twigs, needles, bark, and lichens.

E—1 to 8 inches; grayish brown (10YR 5/1) gravelly sandy loam, dark grayish brown (10YR 4/1) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular and interstitial pores; many silt and sand skeletons on faces of peds; 25 percent gravel; neutral (pH 7.0); clear smooth boundary.

E/Bw—8 to 15 inches; E part (80 percent) is light brownish gray (10YR 6/2) very gravelly sandy loam, brown (10YR 5/3) moist; Bw part (20 percent) is pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine interstitial pores; 3 percent cobbles, 42 percent gravel; neutral (pH 7.0) gradual wavy boundary.

BC—15 to 60 inches; light grayish-brown (10YR 6/1) to pale-brown (10YR 6/3) moist very gravelly sand; loose; very friable, nonsticky, nonplastic; few very fine and fine roots; 10 percent cobbles, 35 percent gravel; neutral (pH 7.0).

Connieo Series

Taxonomic Class: Loamy, mixed, superactive, frigid Lithic Argiustolls

Typical Pedon

Connieo sandy clay loam, bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine interstitial pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt—8 to 14 inches; brown (10YR 5/3) gravelly sandy clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine pores; common faint clay films on faces of peds and bridging sand grains; 25 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Cr—14 to 18 inches; light brownish gray (2.5Y 6/2) decomposing granite bedrock (grus) which crushes to very gravelly loamy coarse sand or coarse sand.

R—18 to 60 inches; hard granite bedrock.

Copenhaver Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Typical Pedon

Copenhaver gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots, many very fine pores; 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt—5 to 14 inches; reddish brown (5YR 4/3) very gravelly clay loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; very hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; few faint clay films on faces of peds and on coarse fragments; 10 percent cobbles, 40 percent gravel; slightly alkaline (pH 7.6) clear smooth boundary.

R—14 to 60 inches; andesite bedrock.

Coslaw Series

Taxonomic Class: Ashy-skeletal, glassy, shallow Ustivitrantic Haplocryepts

Typical Pedon

Coslaw gravelly ashy sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (2.5Y 5/2) gravelly ashy sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 25 percent gravel; strongly acid (pH 5.4); clear wavy boundary.

Bw—4 to 18 inches; light brownish gray (2.5Y 6/2) very gravelly ashy sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine pores; 10 percent cobbles, 40 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Cr—18 to 31 inches; light gray (5Y 7/2) decomposing welded tuff bedrock that crushes to very gravelly ashy sandy loam; neutral (pH 6.8).

R—31 to 60 inches; white fractured hard welded tuff bedrock.

Cowood Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryepts

Typical Pedon

Cowood very channery loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; root mat and forest litter of needles and twigs; abrupt smooth boundary.

E—1 to 5 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular and interstitial pores; many silt and sand skeletons on faces of peds; 40 percent channers; strongly acid (pH 5.1); clear smooth boundary.

Bw—5 to 16 inches; light yellowish brown (10YR 6/4) extremely channery loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky

structure parting to moderate very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular and interstitial pores; 65 percent channers; strongly acid (pH 5.1); abrupt wavy boundary.

R—16 to 60 inches; hard argillite bedrock with a few vertical cracks; few fine roots in some cracks.

Crackerville Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Crackerville loam, bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and common fine interstitial pores; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt—7 to 15 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and fine pores; common faint clay films on faces of peds and bridging sand grains; 40 percent gravel; neutral (pH 7.2); clear wavy boundary.

BC—15 to 23 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine and few fine pores; 30 percent gravel; neutral (pH 7.2); clear wavy boundary.

Cr—23 to 31 inches; very pale brown (10YR 7/3) decomposed granite bedrock (grus) which crushes to very gravelly loamy coarse sand or coarse loamy sand.

R—31 to 60 inches; hard granite bedrock.

Crago Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Aridic Calcustepts

Typical Pedon

Crago gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; light brownish gray (10YR 6/2) gravelly loam, grayish brown (10YR 5/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—4 to 10 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 35 percent gravel; continuous distinct lime casts on undersides of gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—10 to 21 inches; very pale brown (10YR 7/3) extremely gravelly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; 60 percent gravel; continuous prominent lime casts on surfaces of gravel; some cementation between individual gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk3—21 to 37 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; soft, loose, nonsticky and nonplastic; 75 percent gravel; continuous distinct lime casts on gravel; some lime cementation between individual gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C—37 to 60 inches; brownish yellow (10YR 6/6) extremely gravelly loamy sand, yellowish brown (10YR 5/6) moist; massive; loose, nonsticky and nonplastic; 75 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4).

Crampton Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Crampton very cobbly sandy loam, bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 11 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine pores; 25 percent cobbles, 20 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bt1—11 to 21 inches; yellowish brown (10YR 5/4) very cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine tubular pores; many faint clay films on faces of pedes and bridging sand grains; 25 percent cobbles, 20 percent gravel; neutral (pH 7.3); gradual wavy boundary.

Bt2—21 to 30 inches; brown (10YR 5/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine tubular and interstitial pores; common faint clay films bridging sand grains; 25 percent cobbles, 30 percent gravel; neutral (pH 7.1); clear wavy boundary.

BC—30 to 35 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

Cr—35 to 59 inches; yellowish brown (10YR 5/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 7.0).

R—59 to 60 inches; hard granite bedrock.

Crawfish Series

Taxonomic Class: Loamy-skeletal, isotic Lithic Humicryepts

Typical Pedon

Crawfish extremely gravelly ashy loam (Colors are for moist soil unless otherwise noted.)

A—0 to 3 inches; dark brown (7.5YR 3/2) extremely gravelly ashy loam, brown (7.5YR 4/2) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine irregular pores; 20 percent cobbles, 50 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bw—3 to 8 inches; dark brown (7.5YR 3/2) extremely cobbly ashy silt loam, brown (7.5YR 4/4) dry; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few very fine roots; few fine tubular pores; 5 percent stones, 40 percent cobbles, 30 percent gravel; moderately acid (pH 5.8); abrupt irregular boundary.

R—8 to 60 inches; platy andesitic basalt.

Crow Series

Taxonomic Class: Fine, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Crow silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E1—2 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; strong very thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine and fine pores; 5 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

E2—3 to 6 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, firm, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine pores; 10 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

Bt/E—6 to 12 inches; B part (75 percent) is yellowish brown (10YR 5/4) silty clay loam, brown (10YR 4/3) moist; E part (25 percent) is light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist tongues; texture mixed is silty clay loam; strong medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine pores; common distinct clay films on faces of peds and lining pores; 10 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Bt1—12 to 37 inches; yellowish brown (10YR 5/4) silty clay, brown (10YR 4/3) moist; strong medium prismatic structure parting to moderate coarse subangular blocky; very hard, very firm, moderately sticky and moderately plastic; common very fine, fine, medium, and coarse roots; many very fine pores; many distinct clay films on faces of peds and lining pores; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt2—37 to 50 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to moderate medium angular blocky; very hard, very firm, moderately sticky and moderately plastic; few very fine and fine roots; common very fine pores; many prominent clay films on faces of peds and lining pores; 10 percent gravel; slightly acid (pH 6.4); gradual smooth boundary.

BC—50 to 60 inches; very pale brown (10YR 7/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate very fine angular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; many very fine pores; many distinct clay films on faces of peds and lining pores; 10 percent gravel; slightly acid (pH 6.4).

Danaher Series

Taxonomic Class: Fine, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Danaher loam (Colors are for dry soil unless otherwise noted.)

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- Oi—0 to 0.5 inch; forest litter, mostly undecomposed.
- Oe—0.5 to 2 inches; forest litter, mostly decomposed.
- E—2 to 5 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine continuous irregular pores; slightly acid (pH 6.2); clear wavy boundary.
- E/Bt—5 to 9 inches; E part (70 percent) is light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist tongues; Bt part (30 percent) is grayish brown (10YR 5/2) clay loam, brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine and medium roots; common very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- Bt1—9 to 22 inches; brown (7.5YR 5/4) clay loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; common very fine and fine irregular pores; many faint clay films on faces of peds; 10 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.
- Bt2—22 to 40 inches; reddish brown (5YR 5/3) clay loam, strong brown (7.5YR 5/6) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine discontinuous tubular pores; continuous faint clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.
- Bt3—40 to 60 inches; reddish brown (5YR 5/3) clay, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few fine discontinuous tubular pores; few faint clay films on faces of peds; 10 percent gravel; neutral (pH 7.0).

Danielvil Series

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Danielvil loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.
- A2—7 to 12 inches; dark grayish brown (10YR 4/2) gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine interstitial pores; 5 percent cobbles, 10 percent gravel; neutral (pH 7.0); clear smooth boundary.
- Bw—12 to 21 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine interstitial pores; 5 percent cobbles, 10 percent gravel; neutral (pH 7.0); clear smooth boundary.
- C1—21 to 34 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; common very fine interstitial pores; 5 percent cobbles, 10 percent gravel; neutral (pH 7.0); gradual smooth boundary.
- C2—34 to 60 inches; brown (10YR 4/3) gravelly sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and

fine roots; common very fine interstitial pores; 5 percent cobbles, 10 percent gravel; neutral (pH 7.0).

Danvers Series

Taxonomic Class: Fine, smectitic, frigid Vertic Argiustolls

Typical Pedon

Danvers silty clay loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; coats on faces of peds of dark gray (10YR 4/1), black (10YR 2/1) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral (pH 7.0); gradual smooth boundary.
- A2—2 to 4 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark brown (10YR 2/2) moist; coats on faces of peds of dark gray (10YR 4/1), black (10YR 2/1) moist; weak medium prismatic structure parting to weak thin platy; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial and tubular pores; faint skeletal on faces of peds; neutral (pH 7.0); clear smooth boundary.
- Bt1—4 to 8 inches; brown (10YR 4/3) silty clay, dark brown (10YR 3/3) moist; coats on faces of peds of dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure separating to strong very fine and fine subangular blocky; very hard, friable, moderately sticky and moderately plastic; continuous distinct clay films on peds; common very fine roots; many very fine and common fine tubular pores; neutral (pH 7.0); gradual smooth boundary.
- Bt2—8 to 14 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; coats on faces of peds of dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2) moist; moderate fine and medium prismatic structure parting easily to strong very fine and fine blocky; very hard, friable, moderately sticky and moderately plastic; continuous distinct clay films on faces of peds; 5 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.
- Btk—14 to 17 inches; grayish brown (2.5Y 5/2) clay, olive brown (2.5Y 4/3) moist; moderate fine and medium prismatic structure parting to moderate fine subangular blocky; hard, friable, moderately sticky and moderately plastic; common very fine roots; many very fine and few fine tubular pores; few faint clay films on faces of peds with common medium masses of lime; 5 percent gravel; common distinct lime crusts on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.
- Bk1—17 to 27 inches; light yellowish brown (2.5Y 6/3) clay, light olive brown (2.5Y 5/3) moist; moderate very coarse prismatic structure separating to moderate fine and medium blocky; very hard, friable, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; 5 percent gravel; many large white (2.5Y 8/1) masses and nodules of lime; disseminated lime; few faint lime coats on surfaces of gravel; violently effervescent; moderately alkaline (pH 8.0); diffuse wavy boundary.
- Bk2—27 to 44 inches; very pale brown (10YR 7/3) clay loam, pale brown (10YR 6/3) moist; moderate very coarse prismatic structure; very hard, friable, moderately sticky and moderately plastic; few very fine roots; few very fine tubular pores; 5 percent gravel; disseminated lime; few medium masses of lime; few lime-coated gravel; violently effervescent; moderately alkaline (pH 8.0); clear wavy boundary.
- 2C—44 to 60 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; massive; hard, friable, moderately sticky and moderately plastic; few

very fine roots; disseminated lime; strongly effervescent; 20 percent limestone gravel; moderately alkaline (pH 8.0).

Dinnen Series

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Haplocryolls

Typical Pedon

Dinnen sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; brown (10YR 5/3) coarse sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable; few fine and common roots; slightly acid; clear wavy boundary.

AC—8 to 16 inches; brown (10YR 5/4) gravelly sandy loam, dark brown (10YR 4/4) moist; weak medium subangular blocky structure parting to moderate fine granular; extremely hard, very friable; 20 percent very fine and fine angular granitic gravel; peds show small volume change on wetting and drying; few fine roots; moderately acid; clear wavy boundary.

C—16 to 60 inches; brown (10YR 5/4) gravelly sandy loam, dark brown (10YR 4/4) moist; massive separating to single grain; extremely hard, very friable; 20 percent very fine and fine angular granitic gravel; little volume change on wetting and drying; a few roots to 30 inches; moderately acid.

Donald Series

Taxonomic Class: Fine, smectitic Alfic Argicryolls

Typical Pedon

Donald loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate medium subangular blocky structure parting to strong medium granular; hard, firm, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

A2—5 to 9 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to strong medium granular; hard, firm, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 5 percent stones, 5 percent gravel; neutral (pH 7.0); clear wavy boundary.

E—9 to 13 inches; pinkish gray (7.5YR 7/2) sandy loam, brown (7.5YR 5/2) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and nonplastic; many very fine, fine, and medium roots; many fine irregular pores; 3 percent stones, 5 percent cobbles, 5 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

Bt1—13 to 16 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; strong medium columnar structure; very hard, very firm, very sticky and very plastic; common fine roots; few very fine and fine tubular pores; many continuous distinct unstained sand grains on tops of columns and discontinuous distinct unstained sand grains on vertical faces of peds; many distinct clay films on vertical faces of peds and in pores; neutral (pH 7.2); clear wavy boundary.

Bt2—16 to 23 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; common fine roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; slightly alkaline (pH 7.8); clear wavy boundary.

Btk—23 to 35 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; common fine and few medium tubular pores; common distinct clay films on faces of peds and in pores, common medium irregular seams of lime; slightly effervescent on faces of peds; moderately alkaline (pH 8.2); clear wavy boundary.

BC—35 to 60 inches; light brown (7.5YR 6/4) clay, light brown (7.5YR 6/4) moist; massive; hard, firm, moderately sticky and moderately plastic; few fine tubular pores; moderately alkaline (pH 8.2).

Donnelly Series

Taxonomic Class: Sandy-skeletal, mixed Typic Haplocryepts

Typical Pedon

Donnelly silt loam (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 inches; very dark brown (7.5YR 2.5/2) slightly decomposed plant material; strongly acid (5.2 pH); abrupt smooth boundary.

A—2 to 5 inches; dark brown (7.5YR 3/3) silt loam; moderate medium granular structure; very friable, slightly sticky and slightly plastic; many fine and medium roots; strongly acid (5.3 pH); clear smooth boundary.

Bw—5 to 10 inches; 70 percent dark yellowish brown (10YR 4/6) and 30 percent brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; common fine and medium roots; moderately acid (5.6 pH); clear smooth boundary.

2BC—10 to 13 inches; dark yellowish brown (10YR 4/6) very gravelly loamy sand; single grain; loose, nonsticky and nonplastic; few fine and medium roots; 40 percent gravel; moderately acid (5.6 pH); gradual smooth boundary.

2C—13 to 60 inches; variegated very gravelly coarse sand; gravel are rounded; single grain; loose, nonsticky and nonplastic; few fine roots; 50 percent gravel; slightly acid.

Dougcliff Series

Taxonomic Class: Euic, frigid Typic Haplofibrists

Typical Pedon

Dougcliff mucky peat (Colors are for moist soil unless otherwise noted.)

Oi1—0 to 3 inches; black (10YR 2/1) and black (10YR 2/1) rubbed and pressed mucky peat; about 80 percent fiber and raw herbaceous plant material, 70 percent rubbed; massive; nonsticky and nonplastic; 75 percent Lycopodium mosses and 25 percent herbaceous; neutral (pH 7.2 in water); clear smooth boundary.

Oi2—3 to 14 inches; dark reddish brown (5YR 3/2) and dark brown (7.5YR 3/2) rubbed and pressed mucky peat; about 90 percent fiber, about 80 percent rubbed; massive; nonsticky and nonplastic; 90 percent herbaceous and 10 percent Lycopodium mosses; neutral (pH 7.0 in water); clear wavy boundary.

Oi3—14 to 38 inches; dark reddish brown (5YR 2/2) and dark reddish brown (5YR 2/2) rubbed and pressed mucky peat; about 85 percent fiber, about 80 percent rubbed; massive; nonsticky and nonplastic; neutral (pH 7.2 in water); gradual wavy boundary.

Oi4—38 to 60 inches; dark reddish brown (5YR 3/2) and dark reddish brown (5YR 3/2) rubbed and pressed, mucky peat; about 75 percent fiber rubbed; massive;

nonsticky and nonplastic; 95 percent herbaceous; slightly alkaline (pH 7.4 in water).

Dryadine Series

Taxonomic Class: Loamy-skeletal, carbonatic Typic Calcicryepts

Typical Pedon

Dryadine flaggy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; pine needles, twigs, and cones.

Oe—0.5 to 1.5 inches; partly weathered organic matter.

A—1.5 to 4 inches; very dark grayish brown (10YR 3/2) flaggy silt loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and moderately plastic; many very fine and fine and common medium and coarse roots; 15 percent angular cobbles, 10 percent flat angular gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Bw—4 to 14 inches; pale brown (10YR 6/3) extremely flaggy silt loam, brown (10YR 4/3) moist; moderate very fine subangular blocky structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; 30 percent angular cobbles, 35 percent flat angular gravel; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Bk—14 to 27 inches; very pale brown (10YR 7/3) extremely flaggy silt loam, brown (10YR 5/3) moist; moderate very fine subangular blocky structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse and medium roots; many very fine and fine and common medium pores; 50 percent flagstones, 35 percent flat angular gravel; strongly effervescent; slightly alkaline (pH 7.8); diffuse irregular boundary.

C—27 to 36 inches; pale brown (10YR 6/3) extremely flaggy silt loam, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; 65 percent flagstones, 30 percent flat angular gravel; strongly effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.

R—36 to 60 inches; very hard fractured limestone. (Fracture intervals exceed 8 inches.)

Eagleton Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Eagleton loam (Colors are for moist soil unless otherwise noted.)

Ap—0 to 6 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; few fine distinct dark yellowish brown (10YR 4/4) redox concentrations; strong medium and coarse granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; neutral (pH 7.2); abrupt smooth boundary.

A2—6 to 19 inches; very dark grayish brown (10YR 3/2) loam consisting of thin layers of fine sandy loam and clay loam, grayish brown (10YR 5/2) dry; common fine distinct dark yellowish brown (10YR 4/4) redox concentrations; weak fine subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; neutral (pH 7.2); clear wavy boundary.

- A3—19 to 38 inches; very dark grayish brown (10YR 3/2) loam consisting of thin layers of fine sandy loam and clay loam, dark grayish brown (10YR 4/2) dry; common fine and medium distinct dark yellowish brown (10YR 4/6) redox concentrations; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; slightly alkaline (pH 7.6); clear wavy boundary.
- Cg—38 to 60 inches; black (5Y 2.5/1) loam consisting of thin layers of fine sandy loam and silty clay loam, dark gray (5Y 4/1) dry; massive; hard, friable, slightly sticky and slightly plastic; common very fine tubular pores; neutral (pH 7.0).

Earcree Series

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Earcree gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable; many very fine and fine roots; many fine interstitial pores; moderately acid (pH 6.0); clear smooth boundary.
- A2—6 to 20 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.2); clear smooth boundary.
- A3—20 to 28 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.
- A4—28 to 33 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots; many fine tubular pores; slightly acid (pH 6.5); abrupt wavy boundary.
- C1—33 to 50 inches; light brownish gray (2.5Y 6/2) gravelly loamy coarse sand, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; neutral (pH 6.6); clear smooth boundary.
- C2—50 to 58 inches; light olive gray (5Y 6/2) loamy coarse sand, light olive gray (5Y 6/2) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; neutral (pH 7.0); clear smooth boundary.
- C3—58 to 64 inches; light yellowish brown (2.5Y 6/4) loamy coarse sand; massive; slightly hard, friable; few very fine roots; few very fine tubular pores; neutral (pH 6.9).

Eastridge Series

Taxonomic Class: Ashy-skeletal, glassy Vitrandic Haplocryalfs

Typical Pedon

Eastridge very cobbly ashy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; slightly decomposed forest litter.
- E1—2 to 6 inches; dark gray (10YR 4/1) very cobbly ashy loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine irregular

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- pores; 20 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.
- E2—6 to 11 inches; brown (10YR 5/3) very cobbly ashy sandy loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and common fine and medium irregular pores; 25 percent cobbles, 20 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- E/Bt—11 to 15 inches; E part (60 percent) is brown (10YR 5/3) very cobbly ashy sandy clay loam, brown (10YR 4/3) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common fine roots; common fine tubular pores; Bt part (40 percent) is dark grayish brown (10YR 4/2) very cobbly ashy sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common fine roots; common very fine and fine tubular pores; common discontinuous faint clay films on faces of peds; 25 percent cobbles, 20 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- Bt—15 to 28 inches; yellowish brown (10YR 5/4) very cobbly ashy sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common fine roots; common very fine and fine tubular pores; common discontinuous distinct clay films on faces of peds; 25 percent cobbles, 20 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- BC—28 to 60 inches; light yellowish brown (2.5Y 6/3) very cobbly ashy sandy loam, light olive brown (2.5Y 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine irregular pores; 30 percent cobbles, 20 percent gravel; slightly acid (pH 6.2)

Elkner Series

Taxonomic Class: Coarse-loamy, mixed, superactive Lamellic Haplocrypts

Typical Pedon

Elkner sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.
- E1—2 to 9 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak coarse granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium and few coarse roots; 5 percent gravel; slightly acid (pH 6.2); clear wavy boundary.
- E2—9 to 22 inches; light yellowish brown (10YR 6/4) coarse sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse roots; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- E and Bt—22 to 38 inches; E part (80 percent) is light yellowish brown (10YR 6/4) coarse sandy loam, brown (10YR 4/3) moist; B part (20 percent) is yellowish brown (10YR 5/4) coarse sandy loam lamellae 1/8- to 1/2-inch thick, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.
- BC—38 to 60 inches; light yellowish brown (10YR 6/4) gravelly loamy coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent gravel; moderately acid (pH 5.8).

Elmark Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Elmark sandy clay loam, bouldery (Colors are for dry soil unless otherwise noted.)

O_i—2 to 0 inches; partially decomposed needles, twigs, and leaves.

A—0 to 3 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and fine and few medium pores; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

E—3 to 7 inches; light brownish gray (2.5Y 6/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; 5 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

B_t—7 to 19 inches; light yellowish brown (2.5Y 6/4) gravelly sandy clay loam, olive brown (2.5Y 4/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and faces of peds; 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

BC—19 to 30 inches; light olive brown (2.5Y 5/4) gravelly sandy loam, dark grayish brown (2.5Y 4/2), moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; many very fine tubular and interstitial pores; 30 percent gravel; slightly acid (pH 6.1); clear irregular boundary.

Cr—30 to 57 inches; olive (5Y 5/3) decomposed granite bedrock (grus) which crushes to very gravelly loamy coarse sand or gravelly coarse sand, olive gray (5Y 4/2) moist; massive; nonsticky and nonplastic; few very fine roots in upper 1 to 2 inches of horizon; neutral (pH 7.0); gradual smooth boundary.

R—57 inches; hard granite bedrock.

Elve Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Elve very cobbly loam (Colors are for dry soil unless otherwise noted.)

O_e—0 to 1 inch; forest litter of undecomposed and decomposed needles, twigs, and cones.

A—1 to 3 inches; pale brown (10YR 6/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many medium and coarse roots; many very fine and fine pores; 25 percent angular cobbles, 30 percent angular gravel; moderately acid (pH 5.8); abrupt wavy boundary.

E—3 to 18 inches; very pale brown (10YR 7/4) very cobbly loam, yellowish brown (10YR 5/4) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very

fine and fine pores; 30 percent angular cobbles, 25 percent angular gravel; strongly acid (pH 5.5); gradual wavy boundary.

Bw1—18 to 34 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many very fine and fine pores; 35 percent angular cobbles, 30 percent angular gravel; strongly acid (pH 5.4); gradual wavy boundary.

Bw2—34 to 47 inches; yellow (10YR 7/6) extremely cobbly sandy loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure parting to weak fine granular; hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many very fine and fine pores; 35 percent angular cobbles, 30 percent angular gravel; strongly acid (pH 5.4); gradual wavy boundary.

BC—47 to 60 inches; yellow (10YR 7/6) extremely cobbly sandy loam, yellowish brown (10YR 5/6) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine irregular pores; 45 percent angular cobbles, 40 percent angular gravel; strongly acid (pH 5.2).

Elvick Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Oxyaquic Haplocryepts

Typical Pedon

Elvick very cobbly loam, very bouldery (Colors are for dry soil unless otherwise noted.)

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

A—2 to 3 inch; dark grayish brown (10YR 4/2) very cobbly loam, very dark brown (10YR 2/2) moist; weak medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 20 percent cobbles, 15 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

E1—3 to 9 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 25 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

E2—9 to 20 inches; light brownish gray (10YR 6/2) very cobbly loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 30 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

E/Bw—20 to 28 inches; E part (80 percent) is light brownish gray (10YR 6/2) very cobbly coarse sandy loam, brown (10YR 5/3) moist; Bw part (20 percent) is pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine interstitial pores; 30 percent cobbles, 25 percent gravel; slightly acid (pH 6.3) gradual wavy boundary.

Bw—28 to 40 inches; pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; common fine distinct strong brown (7.5YR 5/6) redox concentrations; moderate medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine interstitial pores; 30 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

BC—40 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; common fine distinct strong brown (7.5YR 5/6) redox concentrations; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; few very fine, fine, and medium roots; common very fine and fine interstitial pores; 40 percent cobbles, 25 percent gravel; slightly acid (pH 6.4).

Euell Series

Taxonomic Class: Ashy-Skeletal, glassy Vitrandic Argicryolls

Typical Pedon

Euell gravelly ashy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many fine irregular pores; 5 percent stones, 5 percent cobbles, 20 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Bt—9 to 31 inches; brown (10YR 5/3) extremely gravelly ashy sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and fine and few medium roots; common very fine tubular pores; common faint discontinuous clay films on faces of peds and lining pores; 5 percent stones, 5 percent cobbles, 55 percent gravel; neutral (pH 6.8); gradual smooth boundary.

BC—31 to 43 inches; light olive brown (2.5Y 5/3) very gravelly ashy sandy loam, olive brown (2.5Y 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine tubular pores; 5 percent stones, 5 percent cobbles, 45 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

R—43 to 60 inches; indurated tuffaceous rhyolite.

Evavo Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lamellic Haplocrypts

Typical Pedon

Evavo gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; slightly decomposed forest litter.

A—2 to 8 inches; light yellowish brown (10YR 6/4) gravelly ashy loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, nonsticky and slightly plastic; many fine and medium roots; many fine pores; 25 percent gravel; ash influenced with about 50 percent glass and a bulk density of less than 0.95 g/cc; slightly acid (pH 6.4); clear smooth boundary.

2E1—8 to 17 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; common fine pores; 10 percent cobbles, 40 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2E2—17 to 25 inches; light gray (10YR 7/2) very gravelly sandy loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common fine pores; 10 percent cobbles, 45 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

2E and Bt—25 to 60 inches; E part (75 percent) is very pale brown (10YR 7/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; B part (25 percent) is few

discontinuous pale brown (10YR 6/3) extremely gravelly fine sandy loam lamellae 1/16- to 1/4-inch thick, brown (10YR 5/3) moist; texture mixed is extremely gravelly sandy loam; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common fine pores; 15 percent cobbles, 60 percent gravel; neutral (pH 6.6).

Faith Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Torrifuventic Haplustolls

Typical Pedon

Faith loam (Colors are for dry soil unless otherwise noted.)

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; slightly alkaline (pH 7.4); clear smooth boundary.

Ap2—4 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bw—8 to 14 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 4/2) moist; strong medium prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk—14 to 31 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; strong coarse prismatic structure parting to strong medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; disseminated lime, few very fine threads of lime; strongly effervescent; moderately alkaline (pH 8.3); clear smooth boundary.

2C—31 to 47 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; moderately alkaline (pH 8.2); clear smooth boundary.

2Cg1—47 to 56 inches; grayish brown (2.5Y 5/2) silt loam, dark grayish brown (2.5Y 4/2) moist; common distinct yellowish red (5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; moderately alkaline (pH 8.0).

2Cg2—56 to 60 inches; light olive gray (5Y 6/2) loam, olive gray (5Y 4/2) moist; common faint very dark gray (5Y 3/1) redox depletions; common faint yellowish red (5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; moderately alkaline (pH 8.2).

Farnuf Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Farnuf loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate very thin platy structure in the upper part and moderate medium

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prismatic structure in the lower part with plates and prisms that separate to moderate very fine granules; hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine pores; slightly alkaline (pH 7.4); clear smooth boundary.

Bt—7 to 15 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong fine and medium subangular blocky; very hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine and few medium pores; continuous faint dark grayish brown (10YR 4/2) clay films on faces of peds; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—15 to 24 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate medium prismatic structure separating to weak fine and medium blocky; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine and few medium pores; few masses of lime; strongly effervescent; moderately alkaline (pH 8.3); diffuse wavy boundary.

Bk2—24 to 36 inches; light gray (10YR 7/2) loam, grayish brown (10YR 5/2) moist; weak coarse blocky structure; hard, friable, moderately sticky and slightly plastic; common very fine and fine roots; common very fine and fine pores; 5 percent gravel; common masses of lime; continuous faint coats of lime on gravel; strongly effervescent; moderately alkaline (pH 8.4); diffuse wavy boundary.

BC—36 to 60 inches; very pale brown (10YR 7/3) loam consisting of layers of stratified sandy clay loam and fine sandy loam, brown (10YR 5/3) moist; massive; hard, very friable, moderately sticky and slightly plastic; few very fine and fine roots; common very fine and fine pores; disseminated lime; strongly effervescent; strongly alkaline (pH 8.5).

Fergus Series

Taxonomic Class: Fine, smectitic, frigid Vertic Argiustolls

Typical Pedon

Fergus clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 4 inches; brown (7.5YR 5/2) clay loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots; neutral (pH 7.2); abrupt smooth boundary.

Bt1—4 to 9 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium angular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine roots; many fine pores; many distinct clay films on faces of peds; neutral (pH 7.2); clear smooth boundary.

Bt2—9 to 28 inches; reddish gray (5YR 5/2) clay loam, reddish brown (5YR 4/3) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse blocky; hard, friable, moderately sticky and moderately plastic; many and few very fine roots; many fine pores; many distinct clay films on faces of peds; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt3—28 to 34 inches; reddish brown (5YR 5/3) clay loam, reddish brown (5YR 4/3) moist; moderate medium blocky structure; hard, friable, moderately sticky and moderately plastic; few fine roots; few fine pores; 10 percent gravel; many distinct clay films on faces of peds; few fine threads of lime; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btk—34 to 40 inches; reddish brown (5YR 5/3) silty clay loam, reddish brown (5YR 4/3) moist; moderate coarse blocky structure; hard, friable, moderately sticky and moderately plastic; few fine roots; few fine pores; common distinct clay films on

faces of peds; common medium masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—40 to 60 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; massive; hard, friable, moderately sticky and moderately plastic; common fine and medium masses of lime; moderately effervescent; strongly alkaline (pH 8.6).

Fessler Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Pachic Argiustolls

Typical Pedon

Fessler gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; slightly decomposed forest litter.

A1—3 to 7 inches; black (10YR 2/1) gravelly loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine irregular pores; 5 percent cobbles, 15 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

A2—7 to 13 inches; very dark gray (10YR 3/1) very gravelly clay loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium and common coarse roots; many very fine irregular pores; 15 percent cobbles, 30 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

Bt1—13 to 32 inches; reddish brown (5YR 4/3) very cobbly clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; many very fine and fine and common medium and coarse roots; many very fine tubular pores; many distinct clay films on faces of peds and in pores; 25 percent cobbles, 30 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt2—32 to 40 inches; reddish brown (5YR 5/3) very cobbly clay loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine tubular and common fine tubular pores; common distinct clay films on faces of peds; 25 percent cobbles, 30 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bk—40 to 60 inches; light reddish brown (5YR 6/3) very cobbly sandy clay loam, reddish brown (5YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; few faint clay films on faces of peds; 25 percent cobbles, 25 percent gravel; disseminated lime; few fine filaments of lime; few faint coats of lime on surface of coarse fragments; slightly effervescent; slightly alkaline (pH 7.8).

Figaro Series

Taxonomic Class: Ashy, glassy Vitrandic Haplocryalfs

Typical Pedon

Figaro gravelly ashy loam (Colors are for dry soil unless otherwise noted.)

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

Oe—0.5 to 2 inches; decomposed needles, twigs, and leaves.

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- A—2 to 7 inches; dark grayish brown (2.5Y 4/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium roots; 10 percent cobbles, 15 percent gravel; strongly acid (pH 5.4); clear wavy boundary.
- Bt/E—7 to 18 inches; Bt part (60 percent) is grayish brown (2.5Y 5/2) gravelly ashy clay loam, brown (10YR 5/3) moist; E part (40 percent) is light brownish gray (2.5Y 6/2) gravelly loam, pale brown (10YR 6/3) moist; moderate medium prismatic structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; few faint clay films bridging sand grains and on faces of peds in Bt part; 10 percent cobbles, 15 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- Bt—18 to 30 inches; grayish brown (2.5Y 5/2) ashy clay loam, olive gray (5Y 5/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many medium tubular pores; common distinct clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.
- BC—30 to 43 inches; light gray (2.5Y 7/2) ashy clay loam, light olive gray (5Y 6/2) moist; moderate coarse prismatic structure; hard, firm, moderately sticky and moderately plastic; many very fine and fine and few medium and coarse roots; common medium tubular pores; 10 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.
- C—43 to 60 inches; light gray (2.5Y 7/2) ashy clay loam, olive (5Y 5/3) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine and medium roots; 5 percent gravel; neutral (pH 6.6).

Finn Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Cryaquolls

Typical Pedon

Finn gravelly loam (Colors are for moist soil unless otherwise noted.)

- Oi—0 to 2 inches; partially decomposed organic matter.
- A—2 to 12 inches; black (10YR 2/1) gravelly loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine discontinuous pores; 5 percent cobbles, 10 percent gravel; strongly acid (pH 5.2); clear smooth boundary.
- Bw1—12 to 18 inches; dark yellowish brown (10YR 3/4) very gravelly loam, yellowish brown (10YR 5/4) dry; common fine distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and fine roots; many very fine and fine discontinuous pores; 5 percent cobbles, 35 percent gravel; strongly acid (pH 5.4); clear smooth boundary.
- 2Bw2—18 to 24 inches; dark brown (10YR 3/3) very gravelly sandy clay loam, brown (10YR 5/3) dry; common fine distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine discontinuous pores; 10 percent cobbles, 40 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.
- 2C—24 to 60 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, light yellowish brown (10YR 6/4) dry; many medium distinct yellowish brown (10YR

5/8), brownish yellow (10YR 6/8) dry redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine discontinuous pores; 15 percent cobbles, 40 percent gravel; moderately acid (pH 6.0).

Firada Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Haplocryepts

Typical Pedon

Firada cobbly clay loam (Colors are for dry soil unless otherwise noted.)

O_i—0 to 1 inch; undecomposed and slightly decomposed forest litter.

E—1 to 4 inches; light gray (10YR 7/2) cobbly clay loam, brown (10YR 4/3) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and moderately plastic; many fine, medium, and coarse roots; many very fine and fine pores; 25 percent angular cobbles, 5 percent angular gravel; slightly acid (pH 6.5); clear wavy boundary.

Bw₁—4 to 14 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 4/3) moist; strong very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many fine, medium, and coarse roots; many very fine and fine pores; 25 percent angular cobbles, 15 percent angular gravel; neutral (pH 7.3); clear wavy boundary.

Bw₂—14 to 18 inches; pale brown (10YR 6/3) very cobbly light clay loam, brown (10YR 4/3) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many fine, medium, and coarse roots; many very fine and fine pores; 30 percent angular cobbles, 20 percent angular gravel; slightly effervescent; slightly alkaline (pH 7.6); gradual wavy boundary.

Bk—18 to 26 inches; light brownish gray 910YR 6/2) extremely flaggy light clay loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common fine, medium, and coarse roots; many very fine and fine pores; 45 percent flagstones, 30 percent angular gravel; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

R—26 to 60 inches; extremely hard fractured limestone.

Fleecer Series

Taxonomic Class: Coarse-loamy, mixed, superactive Pachic Haplocryolls

Typical Pedon

Fleecer coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A₁—0 to 4 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; 10 percent, mainly fine, gravel; moderately acid (pH 6.0); clear smooth boundary.

A₂—4 to 18 inches; very dark brown (10YR 2/2) gravelly coarse sandy loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine and fine tubular pores; 15 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

- Bw—18 to 32 inches; brown (10YR 4/3) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine tubular pores; 20 percent, mainly fine, gravel; neutral (pH 6.6); gradual wavy boundary.
- BC—32 to 50 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand, dark grayish brown (10YR 4/2) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots in upper portion; common very fine and fine interstitial pores; 2 percent cobbles; 30 percent, mainly fine, gravel; neutral (pH 6.8); diffuse wavy boundary.
- C—50 to 60 inches; light yellowish brown (2.5Y 6/4) gravelly loamy coarse sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine interstitial pores; 5 percent cobbles; 25 percent, mainly fine, gravel; slightly alkaline (pH 7.4).

Flintcreek Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Flintcreek loam (Colors are for moist soil unless otherwise noted.)

- Oi—0 to 2 inches; decomposed organic mat.
- A—2 to 14 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; many very fine and fine distinct brownish yellow (10YR 6/8) redox concentrations; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores; neutral (pH 6.6); gradual wavy boundary.
- Bg—14 to 26 inches; black (10YR 2/1) stratified gravelly loam and gravelly silt loam, dark gray (10YR 4/1) dry; many very fine distinct brownish yellow (10YR 6/8) redox concentrations; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine interstitial pores; 5 percent cobbles, 10 percent gravel; neutral (pH 6.6); clear smooth boundary.
- 2Cg—26 to 60 inches; very dark grayish brown (10YR 3/2) extremely gravelly loamy sand, gray (10YR 5/1) dry; many very fine distinct brownish yellow (10YR 6/8) redox concentrations; single grain; loose, nonsticky and nonplastic; common very fine roots; 15 percent cobbles, 45 percent gravel; neutral (pH 6.8).

Foolhen Series

Taxonomic Class: Fine-loamy, mixed, superactive Typic Cryaquolls

Typical Pedon

Foolhen loam (Colors are for moist soil unless otherwise noted.)

- Oi—0 to 2 inches; partially decomposed organic matter.
- A—2 to 9 inches; very dark brown (10YR 2/2) loam, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine irregular pores; neutral (pH 7.2); gradual wavy boundary.
- Bw—9 to 20 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; many medium distinct light olive brown (2.5Y 5/6) and olive yellow

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- (2.5Y 6/6) dry redox concentrations; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine irregular pores; neutral (pH 7.2); gradual wavy boundary.
- C1—20 to 27 inches; dark yellowish brown (10YR 4/4) sandy loam with lenses of loamy sand 1- to 2-inches thick, light yellowish brown (10YR 6/4) dry; many medium distinct light olive brown (2.5Y 5/6) and olive yellow (2.5Y 6/6) dry redox concentrations; massive; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine irregular pores; slightly alkaline (pH 7.8); gradual wavy boundary.
- C2—27 to 46 inches; light olive brown (2.5Y 5/6) gravelly loam, olive yellow (2.5Y 6/6) dry; many medium distinct yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) dry redox concentrations; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine irregular pores; 25 percent gravel; slightly alkaline (pH 7.8); gradual wavy boundary.
- Cg3—46 to 60 inches; light olive brown (2.5Y 5/6) gravelly loam, yellow (2.5Y 7/6) dry; many medium distinct yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) dry redox concentrations; massive; hard, friable, slightly sticky and moderately plastic; few very fine and fine roots; few fine irregular pores; 30 percent gravel; slightly alkaline (pH 7.8).

Foxgulch Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Fluvaquentic Haplocryolls

Typical Pedon

Foxgulch silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1 inch; undecomposed and partially decomposed matted roots; abrupt smooth boundary.
- A1—1 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent mica flakes; neutral (pH 6.7); clear wavy boundary.
- A2—11 to 16 inches; very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent mica flakes; slightly alkaline (pH 7.5); clear wavy boundary.
- Bw—16 to 29 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; common threads and masses of dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; strong fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; 10 percent mica flakes; slightly alkaline (pH 7.6); clear wavy boundary.
- BC—29 to 36 inches; light gray (2.5Y 7/2) sandy clay loam, light olive brown (2.5Y 5/3) moist; few fine faint yellowish brown (10YR 5/6) moist redox concentrations; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine dendritic tubular pores; 10 percent mica flakes; 5 percent gravel; neutral (pH 7.3); clear wavy boundary.

2C—36 to 60 inches; pinkish gray (7.5YR 6/2) very gravelly sand, brown (7.5YR 5/2) moist; the upper 10 inches is stratified with lenses of loamy sand, sandy loam and loam with common medium and fine distinct strong brown (7.5YR 5/6) moist redox concentrations; single grain; loose, nonsticky and nonplastic; 10 percent mica flakes; 5 percent cobbles, 45 percent gravel; neutral (pH 6.8).

Franconi Series

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Franconi gravelly sandy clay loam, very bouldery (Colors are for dry soil unless otherwise noted.)

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

E—0 to 5 inches; light brownish gray (10YR 6/2) gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine and few medium pores; 5 percent cobbles, 15 percent gravel; neutral (pH 6.6); clear smooth boundary.

E/Bt—5 to 11 inches; E part (70 Percent) light brownish gray (10YR 6/2) gravelly sandy clay loam, grayish brown (10YR 5/2) moist; Bt part (30 percent) yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and few fine interstitial and tubular pores; few faint clay films bridging sand grains in Bt part; 20 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Bt/E—11 to 19 inches; Bt part (85 percent) yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; E part (15 percent) light brownish gray (10YR 6/2) gravelly sandy clay loam, grayish brown (10YR 5/2) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine interstitial and tubular pores; many faint clay films on faces of peds and bridging sand grains in Bt part; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt1—19 to 28 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to strong fine and medium subangular blocky; hard, firm, moderately sticky and slightly plastic; common very fine and few fine and medium roots; many very fine and few fine interstitial and tubular pores; many faint clay films on faces of peds and bridging sand grains; 5 percent cobbles, 25 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

Bt2—28 to 34 inches; brown (7.5YR 5/4) gravelly clay loam, dark brown 7.5YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine interstitial and tubular pores; common faint clay films on faces of peds and bridging sand grains; 20 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Cr—34 to 38 inches; pale brown (10YR 6/3) decomposed granite bedrock (grus) that crushes to very gravelly coarse sand; slightly acid (pH 6.2); gradual wavy boundary.

R—38 to 60 inches; hard granite bedrock.

Gambler Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Gambler stony loam (Colors are for dry soil unless otherwise noted.)

Oe—0.5 to 0 inch; decomposing needles, leaves, and twigs.

E—0 to 8 inches; very pale brown (10YR 7/3) stony loam, brown (10YR 5/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; 13 percent stones, 3 percent cobbles, 2 percent gravel; slightly acid; clear wavy boundary

E/B—8 to 18 inches; about 60 percent pinkish gray (7.5YR 7/2) stony clay loam, light brown (7.5YR 6/4) moist (E part); 40 percent light brown (7.5YR 6/4) stony clay loam, brown (7.5YR 5/4) moist (B part); weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 15 percent stones, 3 percent cobbles, 2 percent gravel; neutral; clear wavy boundary

Bt—18 to 38 inches; light brown (7.5YR 6/4) very stony clay loam, brown (7.5YR 5/4) moist; moderate medium subangular and angular blocky structure; hard, friable, moderately sticky and moderately plastic; 40 percent stones, 5 percent cobbles, 5 percent gravel; few distinct clay films on faces of peds; neutral; clear wavy boundary

BC—38 to 48 inches; light brown (7.5YR 6/4) very stony clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 35 percent stones, 5 percent cobbles, 5 percent gravel; slightly alkaline; clear wavy boundary

C—48 to 55 inches; pinkish gray (7.5YR 7/2) very stony clay loam, light brown (7.5YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 35 percent stones, 5 percent cobbles, 5 percent gravel; slightly alkaline

R—55 to 60 inches; hard basalt rock.

Garlet Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Haplocryepts

Typical Pedon

Garlet very stony loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed and undecomposed forest litter.

E1—2 to 6 inches; gray (10YR 6/1) very stony loam, dark gray (10YR 4/1) moist; weak thin platy structure parting to very fine granular; soft, very friable, nonsticky and nonplastic; many fine and common coarse roots; 15 percent stones, 25 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

E2—6 to 21 inches; light brownish gray (10YR 6/2) extremely cobbly loam, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; common very fine pores; 5 percent stones, 25 percent cobbles, 40 percent gravel; slightly acid (pH 6.3); clear irregular boundary.

Bw/E—21 to 48 inches; B part (60 percent) is light brown (7.5YR 6/4), brown (7.5YR 5/4) moist; E part (40 percent) is pinkish gray (7.5YR 6/2), brown (7.5YR 5/2) moist; extremely cobbly sandy clay loam; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine pores; faces of peds are coated with gray (10YR 6/1) very fine sand; 5 percent stones, 25 percent cobbles, 40 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Bk—48 to 70 inches; light brownish gray (10YR 6/2) extremely cobbly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 5 percent stones, 25 percent cobbles, 40 percent gravel; continuous distinct lime coats on undersides of rock fragments; disseminated lime; strongly effervescent; moderately alkaline (pH 8.1)

Geohrock Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Aridic Haplustalfs

Typical Pedon

Geohrock gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; pinkish gray (7.5YR 6/2) gravelly loam, dark brown (7.5YR 4/2) moist; moderate very thin platy structure parting to moderate very fine granular; slightly hard, very friable, moderately sticky and slightly plastic; many very fine roots; 20 percent angular gravel; slightly alkaline (pH 7.4); clear smooth boundary.
- Bt—4 to 10 inches; brown (7.5YR 5/3) gravelly clay loam, dark brown (7.5YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; continuous distinct clay film on faces of peds and lining pores; 30 percent angular gravel; slightly alkaline (pH 7.4); clear smooth boundary.
- Btk—10 to 18 inches; brown (7.5YR 5/3) very gravelly loam, dark brown (7.5YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; few faint clay films on faces of peds; 40 percent angular gravel; many medium masses of lime, continuous faint coats of lime on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.1); gradual wavy boundary.
- Bk1—18 to 24 inches; light brown (7.5YR 6/4) extremely gravelly loam, brown (7.5YR 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; 60 percent angular gravel; disseminated lime; continuous distinct lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.
- Bk2—24 to 40 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; 70 percent angular gravel; disseminated lime; continuous distinct lime casts on undersides of gravel; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.
- C1—40 to 45 inches; pinkish gray (7.5YR 6/2) extremely gravelly loam, brown (7.5YR 5/2) moist; massive; slightly hard, friable, moderately sticky and slightly plastic; few very fine roots; 80 percent angular gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- C2—45 to 60 inches; pinkish gray (7.5YR 6/2) extremely gravelly loam, brown (7.5YR 5/3) moist; massive; slightly hard, friable, moderately sticky and slightly plastic; 60 percent angular gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0).

Germangulch Series

Taxonomic Class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Typical Pedon

Germangulch cobbly ashy sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; slightly decomposed forest litter.

E—1 to 9 inches; pale brown (10YR 6/3) cobbly ashy sandy loam, brown (10YR 4/3) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many fine interstitial and irregular pores; 2 percent stones, 10 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt—9 to 23 inches; pale brown (10YR 6/3) cobbly sandy clay loam, brown (10YR 5/3) moist; weak medium prismatic structure; hard, friable, moderately sticky and moderately plastic; common fine roots; common fine tubular pores; common distinct clay films on faces of peds; 10 percent cobbles, 10 percent gravel; neutral (pH 6.6); clear wavy boundary.

BC—23 to 33 inches; light yellowish brown (2.5Y 6/3) gravelly sandy loam, light olive brown (2.5Y 5/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; 15 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

Cr—33 inches; weakly cemented tuffaceous rhyolite.

Gnojek Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Typical Pedon

Gnojek very cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 25 percent cobbles, 20 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt—3 to 7 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; common distinct clay films on faces of peds and bridging sand grains; 15 percent cobbles, 35 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bk—7 to 16 inches; light brownish gray (10YR 6/2) very cobbly loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; 25 percent cobbles, 30 percent gravel; disseminated lime; common medium masses and threads of lime; common distinct lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.2).

R—16 to 60 inches; hard, fine-grained sandstone.

Goldflint Series

Taxonomic Class: Sandy-skeletal, mixed Lithic Cryorthents

Typical Pedon

Goldflint loamy coarse sand (Colors are for dry soil unless otherwise noted.)

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- Oi—0 to 1 inch; litter layer of largely undecomposed conifer needles and twigs.
- A—1 to 3 inches; brown (10YR 4/3) loamy coarse sand, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse and very coarse roots; 10 percent fine subangular gravel; slightly acid (pH 6.4); clear smooth boundary.
- Bw—3 to 11 inches; yellowish brown (10YR 5/4) gravelly loamy coarse sand, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, medium, coarse, and very coarse roots; 25 percent fine subangular gravel and 2 percent subrounded cobbles; slightly acid (pH 6.4); clear smooth boundary.
- BC—11 to 18 inches; variegated colors, mainly yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) very gravelly coarse sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine, fine, and medium and few coarse and very coarse roots; many very fine and fine and common medium interstitial pores; 2 percent subrounded cobbles, 40 percent fine subangular gravel; neutral (pH 6.8); abrupt wavy boundary.
- R—18 to 60 inches; hard granite bedrock.

Goosepeak Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Typical Pedon

Goosepeak extremely gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1 inch; mat of slightly decomposed needles, twigs, and leaves
- E—1 to 6 inches; light brownish gray (10YR 6/2) extremely gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; 60 percent gravel; neutral (pH 6.6); clear smooth boundary.
- Bt1—6 to 16 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common faint clay films on faces of peds; 65 percent gravel; neutral (pH 6.6); clear wavy boundary.
- Bt2—16 to 23 inches; brownish yellow (10YR 6/6) extremely gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common faint clay films as bridges; 65 percent gravel; neutral (pH 6.6); gradual smooth boundary.
- BC—23 to 31 inches; very pale brown (10YR 7/3) extremely gravelly clay loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and slightly plastic; 75 percent gravel; neutral (pH 6.8); gradual smooth boundary.
- C—31 to 66 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 65 percent gravel; neutral (pH 6.8).

Hanson Series

Taxonomic Class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Typical Pedon

Hanson loam (Colors are for dry soil unless otherwise noted.)

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A1—0 to 8 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 5 percent gravel; neutral; gradual smooth boundary.

A2—8 to 14 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic, many very fine roots; many very fine tubular and interstitial pores; 10 percent limestone gravel; disseminated lime; strongly effervescent; slightly alkaline; clear smooth boundary.

Bk1—14 to 26 inches; very pale brown (10YR 7/3) extremely cobbly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and interstitial pores; 50 percent cobbles, 10 percent gravel; disseminated lime; many masses of lime; continuous distinct lime crusts on undersides of rock fragments; violently effervescent; slightly alkaline; diffuse smooth boundary.

Bk2—26 to 42 inches; pale yellow (2.5Y 8/4) extremely cobbly loam, light yellowish brown (2.5Y 6/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; many very fine tubular and interstitial pores; 55 percent cobbles, 25 percent gravel; disseminated lime; many masses of lime; continuous distinct lime crusts on undersides of rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—42 to 60 inches; pale yellow (2.5Y 7/4) extremely cobbly loam, light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and interstitial pores; 55 percent cobbles, 10 percent gravel; disseminated lime; continuous distinct lime coats on rock fragments; violently effervescent; moderately alkaline.

Hapgood Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Hapgood very gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine interstitial and few very fine tubular pores; 40 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A2—3 to 8 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine interstitial and common very fine tubular pores; 40 percent gravel; neutral (pH 6.6); clear smooth boundary.

A3—8 to 26 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial and common very fine tubular pores; 30 percent gravel; neutral (pH 6.6); clear smooth boundary.

AC—26 to 36 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial and common very fine tubular pores; 50 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

- C—36 to 50 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; many fine and medium faint brown (10YR 5/3) iron stains along vertical cleavage planes; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent cobbles, 20 percent gravel; neutral (pH 6.8); abrupt wavy boundary.
- R—50 to 60 inches; hard fractured andesite.

Helmville Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Helmville cobbly loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; forest litter, slightly decomposed.
- E—2 to 10 inches; yellowish brown (10YR 5/4) cobbly loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine discontinuous irregular pores; 15 percent cobbles, 15 percent gravel; neutral (pH 6.6); gradual wavy boundary.
- Bt1—10 to 14 inches; dark yellowish brown (10YR 4/4) very cobbly clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and moderately plastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine discontinuous irregular pores; many thin continuous clay films on faces of peds; 25 percent cobbles, 20 percent gravel; neutral (pH 7.2); gradual wavy boundary.
- Bt2—14 to 25 inches; brownish yellow (10YR 6/6) very cobbly clay loam, yellowish brown (10YR 5/6) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine, fine, and medium roots; many very fine and fine discontinuous irregular pores; many thin continuous clay films on faces of peds; 30 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk—25 to 60 inches; brownish yellow (10YR 6/6) extremely cobbly clay loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine discontinuous irregular pores; 30 percent cobbles, 30 percent gravel; disseminated lime; continuous distinct lime coats on cobbles and gravel, faint and distinct lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 7.9).

Highrye Series

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Highrye sandy loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 3 inches; very dark grayish brown (10YR 3/2) sandy loam, black (10YR 2/1) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; many very fine irregular pores; 5 percent fine gravel; moderately acid (pH 5.6); clear smooth boundary.
- A2—3 to 11 inches; dark grayish brown (10YR 4/2) coarse sandy loam, black (10YR 2/1) moist; moderate medium subangular block structure; slightly hard, very friable,

slightly sticky and nonplastic; common very fine and fine and few medium roots; common very fine irregular and few very fine and fine tubular pores; 10 percent fine gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt1—11 to 23 inches; brown (10YR 5/3) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine tubular pores; 20 percent fine gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—23 to 32 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 30 percent fine gravel; neutral (pH 6.6); gradual irregular boundary.

BC—32 to 46 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine irregular pores; 25 percent fine gravel; neutral (pH 6.8); gradual irregular boundary.

C—46 to 56 inches; yellowish brown (10YR 5/4) very gravelly coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; 35 percent, mainly fine, gravel; neutral (pH 6.8); gradual wavy boundary.

Cr—56 to 60 inches; weathered granite bedrock.

Hilger Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Hilger very stony loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; 10 percent stones, 15 percent cobbles, 15 percent gravel; slightly alkaline (pH 7.8); clear wavy boundary.

Bt1—5 to 9 inches; brown (10YR 4/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to strong fine subangular blocky; hard, firm, moderately sticky and moderately plastic; many very fine roots and pores; 5 percent stones, 25 percent cobbles, 15 percent gravel; many faint clay films on faces of peds and on surfaces of rock fragments; slightly alkaline (pH 7.8); clear wavy boundary.

Bt2—9 to 15 inches; brown (10YR 5/3) extremely cobbly clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong very fine subangular blocky; hard, firm, moderately sticky and moderately plastic; many very fine roots and pores; continuous faint clay films on faces of peds and on surfaces of coarse fragments; 5 percent stones, 35 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.8); clear wavy boundary.

Bk1—15 to 19 inches; light brownish gray (2.5Y 6/2) extremely cobbly loam, grayish brown (2.5Y 5/2) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots and pores; 5 percent stones, 30 percent cobbles, 25 percent gravel; few large masses of lime; continuous distinct lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk2—19 to 24 inches; light gray (2.5Y 7/2) extremely cobbly loam, grayish brown (2.5Y 5/2) moist; moderate very fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; 5 percent stones, 45 percent cobbles, 10 percent

gravel; common fine masses and filaments of lime; continuous distinct lime casts on surfaces of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

BC—24 to 60 inches; light yellowish brown (2.5Y 6/4) extremely cobbly loam, olive brown (2.5Y 4/4) moist; massive; hard, very friable, nonsticky and nonplastic; 20 percent stones, 30 percent cobbles, 20 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2).

Hiore Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Hiore coarse sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest litter of partially decomposed needles and twigs.

A1—1 to 3 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and fine pores; 5 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

A2—3 to 8 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and fine pores; 15 percent gravel; neutral (pH 7.0); gradual smooth boundary.

Bw1—8 to 23 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; common fine pores; 30 percent gravel; neutral (pH 7.2); gradual smooth boundary.

Bw2—23 to 36 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; 40 percent gravel; neutral (pH 7.2); gradual smooth boundary.

BC—36 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy coarse sand, yellowish brown (10YR 5/6) moist; single grain; loose, nonsticky and nonplastic; 60 percent gravel; few medium roots; neutral (pH 7.2).

Holloway Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Haplocryepts

Typical Pedon

Holloway gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.

A—3 to 13 inches; light yellowish brown (10YR 6/4) gravelly ashy silt loam, dark yellowish brown (10YR 4/4) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many very fine and fine pores; 5 percent angular cobbles, 25 percent angular gravel; ash influenced with 5 percent or more glass; strongly acid (pH 5.5); clear wavy boundary.

2E—13 to 20 inches; light gray (10YR 7/2) extremely gravelly fine sandy loam, light brownish gray (10YR 6/2) moist; weak fine granular structure; soft, very friable,

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nonsticky and nonplastic; common fine, medium, and coarse roots; common very fine and fine pores; 10 percent angular cobbles, 55 percent angular gravel; moderately acid (pH 5.6); gradual smooth boundary.

2E and Bt—20 to 55 inches; E part (75 percent) is light gray (10YR 7/2) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; B part (25 percent) is pale brown (10YR 6/3) fine sandy loam lamellae 1/8- to 1/2-inch thick, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine pores; 10 percent angular cobbles, 55 percent angular gravel; moderately acid (pH 5.9); gradual smooth boundary.

2C—55 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine pores; 15 percent angular cobbles, 55 percent angular gravel; slightly acid (pH 6.4).

Hoyt Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Hoyt loam (Colors are for dry soil unless otherwise noted.)

Oi—1 inch to 0; partially decomposed twigs and needles.

A1—0 to 6 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; common very fine irregular pores; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—6 to 12 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine tubular pores; common skeletal fragments of light brownish gray (10YR 6/2) unstained sand silt grains; 15 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—12 to 23 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common fine and medium roots; many very fine tubular pores; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 5 percent cobbles, 15 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt2—23 to 37 inches; light olive brown (2.5Y 5/4) gravelly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and few medium roots; many very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; 5 percent cobbles, 15 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

BC—37 to 60 inches; light olive brown (2.5Y 5/4) gravelly coarse sandy loam, olive brown (2.5Y 4/4) moist; massive; soft, friable, moderately sticky and nonplastic; few fine and medium roots; 5 percent cobbles, 15 percent gravel; common very fine irregular pores; slightly alkaline (pH 7.6).

Hun Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Hun gravelly silt loam (Colors are for dry soil unless otherwise noted. When described, the soil was dry throughout.)

Oi—0 to 1.5 inches; needles, leaves, twigs, and cones.

Oe—1.5 to 2 inches; decomposed organic matter with discontinuous light gray (10YR 7/1) volcanic ash.

Bw1—2 to 9 inches; light yellowish brown (10YR 6/4) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure parting to strong fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine and fine and common medium tubular pores; 25 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

2Bw2—9 to 14 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine and fine tubular pores; 15 percent cobbles, 35 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

2Bw3—14 to 25 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and common fine tubular pores; 10 percent cobbles, 35 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C—25 to 55 inches; very pale brown (10YR 7/4) stony cobbly loamy sand, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable; few very fine and fine roots; common very fine interstitial pores; 20 percent stones, 20 percent cobbles, 40 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

Cr—55 to 60 inches; fractured and weathered granite.

Hungryhill Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Hungryhill gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and moderately plastic; many very fine and fine roots; many fine tubular pores; 3 percent stones, 5 percent cobbles, 20 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt—7 to 17 inches; brown (10YR 5/3) extremely gravelly clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; hard, friable, moderately sticky and moderately plastic; many fine roots; many fine irregular and tubular pores; common distinct clay films on faces of peds; 20 percent cobbles, 40 percent gravel; neutral (pH 6.6); gradual wavy boundary.

BC—17 to 26 inches; pale brown (10YR 6/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine roots; common fine irregular pores; 45 percent gravel; neutral (pH 6.8); abrupt irregular boundary.

R—26 to 60 inches; indurated rhyolitic tuff.

Illiano Series

Taxonomic Class: Ashy-skeletal, glassy Lithic Haplocryepts

Typical Pedon

Illiano very flaggy ashy sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2) very flaggy ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; 25 percent flagstones, 30 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw—4 to 11 inches; light brownish gray (10YR 6/2) very flaggy ashy sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; 25 percent flagstones, 30 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

R—11 to 60 inches; light gray (5Y 7/1) fractured hard welded tuff bedrock.

Jeffcity Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Jeffcity loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt—7 to 14 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial and tubular and few fine pores; many faint clay films bridging sand grains and common faint clay films on faces of peds; 30 percent gravel; neutral (pH 7.3); gradual wavy boundary.

Bk—14 to 33 inches; light olive brown (2.5Y 5/4) gravelly coarse sandy loam, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular and interstitial pores; 30 percent gravel; disseminated lime, many medium and large seams and masses of white (10YR 8/2) lime; strongly effervescent; moderately alkaline (pH 8.0); gradual irregular boundary.

Cr—33 to 38 inches; light olive brown (2.5Y 5/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand or loamy coarse sand; slightly alkaline (pH 7.8).

R—38 to 60 inches; hard granite bedrock.

Jeru Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystrocryepts

Typical Pedon

Jeru gravelly loam, extremely stony (Colors are for dry soil unless otherwise noted.)

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

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Oe—0.5 to 2 inches; decomposed organic matter with 0.5 inch of discontinuous, light gray (10YR 7/1) volcanic ash.

A—2 to 7 inches, yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine interstitial and few fine tubular pores; 4 percent stones on surface, 15 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw1—7 to 24 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine interstitial and few fine tubular pores; common very fine mica flakes; 5 percent cobbles, 15 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw2—24 to 33 inches; very pale brown (10YR 7/4) very cobbly sandy loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable; many very fine and few fine roots; many very fine interstitial and common fine tubular pores; many very fine and common fine mica flakes; 20 percent cobbles, 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

C—33 to 62 inches; very pale brown (10YR 7/3) extremely stony sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few very fine and fine roots; common very fine interstitial and few fine tubular pores; many very fine, fine, and few medium mica flakes; 20 percent stones, 20 percent cobbles, 20 percent gravel; neutral (pH 6.6).

Judco Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustivitrandid Haplocryepts

Typical Pedon

Judco very gravelly ashy sandy loam (Colors are for dry soil unless otherwise noted.)

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

Oe—0.5 to 2 inches; well decomposed needles, twigs, and leaves.

A1—2 to 4 inches; dark gray (10YR 4/1) very gravelly ashy sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; 10 percent cobbles, 30 percent gravel; strongly acid (pH 5.4); clear wavy boundary.

A2—4 to 6 inches; gray (10YR 5/1) very gravelly ashy sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine pores; 10 percent cobbles, 30 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

Bw—6 to 12 inches; yellowish brown (10YR 5/4) very gravelly ashy sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium and coarse roots; many very fine pores; 10 percent cobbles, 30 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

BC1—12 to 23 inches; light gray (2.5Y 7/2) very gravelly ashy sandy loam, dark grayish brown (2.5Y 4/2) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine pores; 10 percent cobbles, 45 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

- BC2—23 to 40 inches; light gray (2.5Y 7/2) very gravelly ashy sandy clay loam, grayish brown (2.5Y 5/2) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; common fine pores; 5 percent cobbles, 45 percent gravel; neutral (pH 6.6); gradual wavy boundary.
- C—40 to 58 inches; light gray (10YR 7/2) very gravelly ashy sandy clay loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; 5 percent cobbles, 45 percent gravel; neutral (pH 6.6); clear wavy boundary.
- Cr—58 to 60 inches; light gray (10YR 7/2) decomposing welded tuff bedrock that crushes to very gravelly ashy sandy loam; neutral (pH 6.6).

Judell Series

Taxonomic Class: Fine-loamy, carbonatic, frigid Typic Calciustolls

Typical Pedon

Judell clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, very friable, moderately sticky and moderately plastic; many very fine and fine and common medium and coarse roots; less than 5 percent limestone gravel; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bk1—7 to 11 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine and common medium and coarse roots; many very fine and fine pores; less than 5 percent limestone gravel; few fine irregular soft masses of lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—11 to 28 inches; very pale brown (10YR 7/3) clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium and coarse roots; many very fine and fine and few medium pores; less than 5 percent lime-coated gravel; common fine and medium irregular soft masses of lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk3—28 to 54 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; common fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine, fine, and few medium roots; many very fine and fine pores; less than 5 percent limestone gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2C—54 to 67 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; massive; soft, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine pores; 5 percent cobbles, 60 percent gravel; violently effervescent; moderately alkaline (pH 8.4)

Julius Series

Taxonomic Class: Fine, mixed, superactive, frigid Alfic Argiustolls

Typical Pedon

Julius loam (Colors are for dry soil unless otherwise noted.)

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- Ap1—0 to 4 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; many very fine tubular pores; neutral (pH 7.2); clear wavy boundary.
- Ap2—4 to 8 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine pores; neutral (pH 6.6); clear wavy boundary.
- Bt/E—8 to 11 inches; Bt part (65 percent) is brown (7.5YR 5/4) clay loam, dark brown (10YR 4/4) moist; E part (35 percent) is pinkish gray (7.5YR 6/2) loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many fine and medium roots; common fine tubular pores; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt1—11 to 17 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong medium columnar structure; very hard, very firm, very sticky and very plastic; common fine and medium roots; few very fine tubular pores; many distinct clay films on faces of peds; strongly alkaline (pH 8.6); clear wavy boundary
- Bt2—17 to 23 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure; hard, firm, moderately sticky and moderately plastic; many very fine and common fine and medium roots; common very fine tubular pores; common faint clay films on faces of peds; slightly alkaline (pH 7.6); abrupt wavy boundary.
- Bk—23 to 33 inches; very pale brown (10YR 8/3) loam, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; disseminated lime, common fine masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Cr—33 to 60 inches; very pale brown (10YR 8/4) semiconsolidated tuff.

Jurvannah Series

Taxonomic Class: Sandy-skeletal, mixed Typic Cryaquents

Typical Pedon

Jurvannah sandy loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 6 inches; grayish brown (10YR 5/2) sandy loam, very dark gray (10YR 3/1) moist; weak fine granular structure; loose; common very fine roots; many very fine interstitial pores; moderately acid (pH 6.0); abrupt smooth boundary.
- C1—6 to 10 inches; very pale brown (10YR 7/3) sand, brown (10YR 5/3) moist; common distinct fine and medium dark brown (7.5YR 4/4) and few fine faint light yellowish brown (10YR 6/4) mottles; weak granular structure; loose; few very fine roots; moderately acid (pH 5.6); abrupt smooth boundary.
- C2—10 to 22 inches; white (10YR 8/1) and brownish yellow (10YR 6/6) gravelly sand, brownish yellow (10YR 6/6) moist; single grain; loose; moderately acid (pH 5.9); clear smooth boundary.
- C3—22 to 38 inches; pink (7.5YR 7/4) and yellowish red (5Y 4/6) very gravelly sand, yellowish red (5YR 4/6) moist; single grain; loose; slightly acid (pH 6.2); abrupt smooth boundary.
- C4—38 to 60 inches; very pale brown (10YR 7/3) and pale brown (10YR 6/3) very gravelly sand, pale brown (10YR 6/3), very pale brown (10YR 7/3) and dark yellowish brown (10YR 4/4) moist; single grain; loose; slightly acid (pH 6.2).

Kadygulch Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustepts

Typical Pedon

Kadygulch gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—2 to 0 inches; partially decomposed twigs and needles.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and common medium and coarse roots; many very fine and fine and common medium pores; 20 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

E—4 to 11 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; many very fine and common fine and medium pores; 40 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Bw1—11 to 19 inches; light yellowish brown (10YR 6/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; common very fine, fine, and medium pores; 35 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

Bw2—19 to 34 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, yellowish brown (10YR 5/6) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few fine, medium, and coarse roots; common very fine, fine, and medium pores; 55 percent gravel; strongly acid (pH 5.4); clear wavy boundary.

BC—34 to 60 inches; brownish yellow (10YR 6/6) extremely gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; few fine, medium, and coarse roots; common very fine, fine, and medium pores; 10 percent cobbles; 55 percent gravel; strongly acid (pH 5.2).

Kellygulch Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Typic Haplustepts

Typical Pedon

Kellygulch coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

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

A—0 to 5 inches; grayish brown (10YR 5/2) coarse sandy loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and fine and few medium pores; 10 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw—5 to 13 inches; brown (10YR 5/3) coarse sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

BC—13 to 27 inches; light brownish gray (2.5Y 6/2) gravelly coarse sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky

structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.
Cr—27 to 31 inches; pale olive (5Y 6/3) decomposed granite bedrock (grus) that crushes to very gravelly coarse sand or loamy coarse sand; neutral (pH 7.0).
R—31 to 60 inches; hard granite bedrock.

Kilgore Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Cumulic Cryaquolls

Typical Pedon

Kilgore silt loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots and pores; few fine yellowish brown (10YR 5/6) iron concentrations; neutral (pH 7.2); clear smooth boundary.
- A2—4 to 16 inches; dark gray (10YR 4/1) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and moderately plastic; many fine roots and pores; few fine yellowish brown (10YR 5/6) iron concentrations; slightly alkaline (pH 7.4); clear smooth boundary.
- Ag—16 to 25 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few fine roots; few fine yellowish brown (10YR 5/6) iron concentrations; slightly alkaline (pH 7.4); clear smooth boundary.
- 2Cg—25 to 29 inches; dark gray (10YR 4/1) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive, soft, friable, nonsticky and nonplastic; 5 percent cobbles, 25 percent gravel; common distinct medium yellowish brown (10YR 5/6) iron concentrations; neutral (pH 7.3); clear wavy boundary.
- 2C—29 to 60 inches; very gravelly loamy sand; single grain, loose; 15 percent cobbles, 40 percent gravel; neutral.

Kimpton Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Typical Pedon

Kimpton very cobbly loam, very bouldery (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1 inch; partially decomposed needles, twigs, and leaves.
- A—1 to 5 inches; dark grayish brown (10YR 4/2) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles, 25 percent gravel; neutral (pH 6.6); clear wavy boundary.
- E—5 to 7 inches; grayish brown (10YR 5/2) very cobbly loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles, 20 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt—7 to 14 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common medium interstitial and tubular pores; common distinct very dark grayish brown (10YR 3/2) clay films on faces of peds and bridging sand grains; 20 percent cobbles, 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bk—14 to 33 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 25 percent cobbles, 25 percent gravel; common fine and medium masses and threads of lime, common distinct lime coats on undersides of rock fragments; slightly alkaline (pH 7.8); clear smooth boundary.

R—33 to 60 inches; hard, fine-grained sandstone bedrock.

Kloutch Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystrocrypts

Typical Pedon

Kloutch gravelly sandy loam (Colors are for dry soil unless otherwise noted. When described the soil was moist throughout.)

Oi—0 to 1 inch; slightly decomposed needles, leaves, and twigs.

Oe—1 to 1.5 inch; well-decomposed needles, leaves, and twigs.

A—1.5 to 6 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; very soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine and few fine tubular and interstitial pores; 30 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

Bw1—6 to 12 inches; yellowish brown (10YR 5/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; soft, very friable; few very fine, fine, and medium roots; common very fine interstitial pores; 10 percent cobbles, 30 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

Bw2—12 to 27 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, yellowish brown (10YR 5/6) moist; moderate medium and coarse subangular blocky structure; soft, very friable; few fine and medium roots; common very fine interstitial pores; 10 percent cobbles, 50 percent gravel; slightly acid (pH 6.5); abrupt wavy boundary.

R—27 to 60 inches; hard, fractured granite.

Kounter Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Typical Pedon

Kounter very cobbly coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; dark grayish brown (10YR 4/2) very cobbly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine interstitial pores; 20 percent cobbles, 15 percent gravel; neutral (pH 6.8); clear wavy boundary.

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Bw—2 to 7 inches; brown (10YR 5/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and common fine roots; many very fine and fine interstitial pores; 15 percent cobbles, 30 percent gravel; disseminated lime; few faint lime coats on undersides of rock fragments; slightly effervescent; slightly alkaline (pH 7.4); clear wavy boundary.

Bk—7 to 14 inches; light brownish gray (10YR 6/2) very gravelly coarse sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine interstitial pores; 10 percent cobbles, 35 percent gravel; common fine masses and threads of lime, common distinct lime coats around fragments; violently effervescent; moderately alkaline (pH 8.2).

Cr—14 to 17 inches; light gray (10YR 7/1) decomposed granite bedrock (grus) that crushes to loamy coarse sand.

R—17 to 60 inches; hard light gray (10YR 7/1) granite bedrock.

Krutar Series

Taxonomic Class: Loamy-skeletal over sandy or sandy-skeletal, mixed, superactive, frigid Typic Calcicustolls

Typical Pedon

Krutar loam (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine pores; 5 percent gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bw—8 to 13 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular and few medium pores; 5 percent cobbles, 20 percent gravel; disseminated lime; continuous distinct lime coats on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—13 to 21 inches; light gray (10YR 7/2) very gravelly loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent cobbles, 25 percent gravel; disseminated lime; continuous distinct lime casts on rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2C—21 to 60 inches; light brownish gray (10YR 6/2) very cobbly loamy sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few fine roots; 30 percent cobbles, 25 percent gravel; disseminated lime; continuous distinct lime coats on sides of rock fragments and continuous prominent lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4).

Kurrie Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Kurrie very cobbly sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Soil Survey of Deerlodge National Forest Area, Montana

- Oi—0 to 2 inches; partially decomposed needles, twigs, and leaves.
- A—2 to 6 inches; brown (10YR 5/3) very cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and fine pores; 20 percent cobbles, 15 percent gravel; neutral (pH 6.6); clear wavy boundary.
- E—6 to 11 inches; light gray (2.5Y 7/2) very cobbly sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine and fine pores; 5 percent stones, 20 percent cobbles, 10 percent gravel; slightly acid (pH 6.1); clear wavy boundary.
- E/Bt—11 to 25 inches; E part (80 percent) is light gray (2.5Y 7/2) very cobbly sandy loam, grayish brown (2.5Y 5/2) moist; B part (20 percent) is light yellowish brown (2.5Y 6/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine and fine tubular and interstitial pores; many faint clay films bridging sand grains in B part; 5 percent stones, 30 percent cobbles, 10 percent gravel; slightly acid (pH 6.3); clear wavy boundary.
- Bt—25 to 43 inches; light yellowish brown (2.5Y 6/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine, medium, and coarse roots; many very fine and few fine tubular pores; many faint clay films bridging sand grains; 30 percent cobbles, 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.
- BC—43 to 48 inches; grayish brown (2.5Y 5/2) gravelly coarse sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; many very fine and few fine tubular and interstitial pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Cr—48 to 55 inches; light brownish gray (2.5Y 6/2) decomposed granite bedrock (grus) that crushes to gravelly coarse sand; neutral (pH 6.8).
- R—55 to 60 inches; hard granite bedrock.

Lap Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Lithic Calciustolls

Typical Pedon

Lap very channery loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; dark grayish brown (10YR 4/2) very channery loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 35 percent channers (flat 1 to 4 inch diameter limestone fragments); slightly alkaline (pH 7.4); clear wavy boundary.
- Bk1—4 to 12 inches; light brownish gray (10YR 6/2) very channery loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; 50 percent channers; disseminated lime, continuous prominent lime casts on undersides of channers; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- Bk2—12 to 19 inches; light gray (10YR 7/2) extremely channery loam, brown (10YR 5/3) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; 65 percent channers; disseminated lime; continuous prominent

lime casts on undersides of channers; violently effervescent; moderately alkaline (pH 8.4); gradual irregular boundary.
R—19 to 60 inches; hard limestone bedrock with some cracks.

Larkspur Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, nonacid Lithic Cryorthents

Typical Pedon

Larkspur very cobbly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate medium granular structure; very friable, slightly hard, nonsticky and nonplastic; common fine and few medium roots; many fine interstitial pores; 20 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

C—3 to 8 inches; light gray (10YR 7/2) very cobbly coarse sandy loam, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few fine roots; common fine interstitial pores; 25 percent cobbles, 30 percent gravel; neutral (pH 6.8); abrupt irregular boundary.

R—8 to 60 inches; fractured gray rhyolitic tuff.

Leighcan Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Typic Dystricrypts

Typical Pedon

Leighcan very stony sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest duff.

E—1 to 8 inches; light brownish gray (10YR 6/2) very stony sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many medium and coarse and few fine roots; 10 percent boulders and stones, 15 percent cobbles, 25 percent gneiss gravel; strongly acid (pH 5.3); clear smooth boundary.

Bw1—8 to 46 inches; pale brown (10YR 6/3) very stony sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many medium and coarse and few fine roots; 10 percent boulders and stones, 15 percent cobbles, 25 percent gneiss gravel; moderately acid (pH 5.6); gradual wavy boundary.

Bw2—46 to 61 inches; light yellowish brown (10YR 6/4) very stony sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few prominent redox concentrations, few distinct redox depletions; rock fragments have some remnant patches of reddish brown clay coats; 10 percent boulders and stones, 15 percent cobbles, 25 percent gneiss gravel; moderately acid (pH 5.6).

Levengood Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Pachic Haplocryolls

Typical Pedon

Levengood gravelly loam (Colors are for dry soil unless otherwise noted.)

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- A—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic, many very fine and fine roots; common fine interstitial pores; 5 percent cobbles, 20 percent gravel; neutral (pH 7.0); clear smooth boundary.
- Bw—6 to 12 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine tubular pores; 5 percent cobbles, 30 percent gravel, neutral (pH 7.0); clear smooth boundary.
- Bk1—12 to 19 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine pores; 10 percent cobbles, 35 percent gravel; disseminated lime, few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.
- Bk2—19 to 30 inches; pale yellow (2.5Y 7/4) very gravelly fine sandy loam, light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 10 percent cobbles, 35 percent gravel; disseminated lime, few fine masses of lime; violently effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.
- Bk3—30 to 60 inches; very pale brown (10YR 7/4) very cobbly loam, light yellowish brown (10YR 6/4) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent cobbles, 20 percent gravel; disseminated lime, few fine masses of lime; violently effervescent; moderately alkaline (pH 8.0).

Libeg Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Libeg stony loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 6 inches; dark grayish brown (10YR 4/2) stony loam, black (10YR 2/1) moist; weak thin platy structure parting to moderate very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine pores; 25 percent sandstone fragments; slightly acid (pH 6.4); clear wavy boundary.
- Bt1—6 to 11 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; strong very fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; pale brown (10YR 6/3) fine sand coats on some faces of peds; faint clay films on faces of some peds and on rock fragments; 35 percent channery sandstone fragments; slightly acid (pH 6.5); clear wavy boundary.
- Bt2—11 to 16 inches; brown (7.5YR 5/4) very channery clay loam, brown (7.5YR 4/4) moist; strong very fine and fine angular blocky structure; very hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; pale brown (10YR 6/3) fine sand coats on vertical faces of peds; faint clay films on faces of some peds and on rock fragments; 40 percent sandstone fragments; slightly acid (pH 6.5); clear wavy boundary.
- Bt3—16 to 30 inches; reddish brown (5YR 5/4) very channery sandy clay loam, reddish brown (5YR 4/4) moist; strong fine and medium angular blocky structure; extremely hard, friable, moderately sticky and moderately plastic; common very fine and fine and few coarse roots; many very fine and fine and few medium pores; distinct continuous clay films on all faces of peds and on rock fragments; 60 percent channers; slightly acid (pH 6.2); gradual irregular boundary.

BC—30 to 60 inches; light reddish brown (5YR 6/4) very stony sandy loam, yellowish red (5YR 5/6) moist; weak fine and medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine pores; 50 percent stones, 30 percent angular gravel, 80 percent sandstone fragments; slightly acid (pH 6.5).

Lilylake Series

Taxonomic Class: Sandy-skeletal, mixed Histic Cryaquepts

Typical Pedon

Lilylake muck (Colors are for moist soil unless otherwise noted. When described on September 2, 1986, the soil was moist throughout.)

OA1—0 to 3 inches; black (10YR 2/1) on broken face and rubbed, muck; about 25 percent fibers, about 5 percent after rubbing; weak medium granular structure; many very fine and fine and few coarse roots; slightly acid (pH 6.2); clear smooth boundary.

Oa2—3 to 9 inches; very dark brown (10YR 2/2) on broken face and rubbed, muck; about 30 percent fibers, about 10 percent after rubbing; massive; many very fine and fine and few coarse roots; moderately acid (pH 6.0); clear wavy boundary.

Oa3—9 to 12 inches; very dark brown (10YR 2/2) on broken face and black (10YR 2/1) rubbed, muck; about 40 percent fibers, about 5 percent after rubbing; massive; many very fine and few coarse roots; moderately acid (pH 6.0); clear wavy boundary.

2C1—12 to 15 inches; dark grayish brown (2.5Y 4/2) sand, brown (10YR 5/3) dry; common fine and medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 4/6) redox concentrations; single grain; loose; many very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

2C2—15 to 60 inches; dark grayish brown (2.5Y 4/2) extremely gravelly coarse sand, light brownish gray (2.5Y 6/2) dry; many coarse prominent brown (7.5YR 4/4) and strong brown (7.5YR 4/6) redox concentrations; single grain; loose; many fine and medium irregular pores; 1 percent stones, 25 percent cobbles, 50 percent gravel; slightly acid (pH 6.4).

Littlesalmon Series

Taxonomic Class: Sandy-skeletal, mixed Andic Haplocryepts

Typical Pedon

Littlesalmon ashy loam (Colors are for dry soil unless otherwise noted. When described on July 6, 1988, the soil was moist throughout.)

Oe—0 to 2 inches; slightly decomposed cones, twigs, needles, and leaves.

Oa—2 to 3 inches; highly decomposed Oe horizon material.

A1—3 to 7 inches; grayish brown (10YR 5/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine irregular pores; slightly acid (pH 6.4); clear smooth boundary.

A2—7 to 16 inches; brown (10YR 5/3) ashy loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine irregular pores; 1 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

- 2Bw—16 to 23 inches; pale brown (10YR 6/3) cobbly sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few coarse roots; many fine tubular pores; 15 percent cobbles, 15 percent gravel; moderately acid (pH 6.0); clear smooth boundary.
- 2BC—23 to 31 inches; pale brown (10YR 6/3) very cobbly loamy coarse sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many medium irregular pores; 30 percent cobbles, 20 percent gravel; neutral (pH 6.6); abrupt wavy boundary.
- 2C1—31 to 43 inches; grayish brown (10YR 5/2) and light gray (10YR 7/2) extremely cobbly loamy coarse sand, dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and few coarse roots; many medium irregular pores; 90 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.
- 2C2—43 to 63 inches; similar to 2C1 except colors of grayish brown (10YR 5/2) and very pale brown (10YR 8/3) dry and dark grayish brown (10YR 4/2) and brown (10YR 5/3) moist.
- 2Cr—63 inches; highly weathered granite.

Loberg Series

Taxonomic Class: Clayey-skeletal, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Loberg gravelly clay loam, stony (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; forest litter and humus.
- E—2 to 5 inches; light brownish gray (10YR 6/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; weak thick platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; sand grains are clear and unstained; 0.05 percent stones on surface, 10 percent cobbles, 15 percent gravel; strongly acid (pH 5.1); clear wavy boundary.
- E/Bt—5 to 14 inches; E part (75 percent) is light brownish gray (10YR 6/2) stony loam, dark brown (7.5YR 3/3) moist, tongues; Bt part (25 percent) is pale brown (10YR 6/3) stony clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure parting to moderate fine granular; hard, friable, slightly sticky and slightly plastic; many fine roots; continuous distinct clay films on faces of peds that are coated with clear unstained sand grains; 10 percent stones, 5 percent cobbles, 15 percent gravel; strongly acid (pH 5.2); clear wavy boundary.
- Bt1—14 to 29 inches; pale brown (10YR 6/3) very stony clay, dark brown (10YR 3/3) moist; strong fine and medium blocky structure; very hard, firm, very sticky and very plastic; continuous prominent clay films on faces of peds; continuous prominent clay films on gravel surfaces; common fine roots; 10 percent stones, 10 percent cobbles, 20 percent gravel; moderately acid (pH 5.6); gradual smooth boundary.
- Bt2—29 to 51 inches; pale brown (10YR 6/3) very stony clay, dark brown (10YR 3/3) moist; strong fine and medium blocky structure parting to moderate medium blocky in lower part; very hard, firm, very sticky and very plastic; common fine roots; continuous prominent clay films on faces of peds; continuous prominent clay films of surfaces of gravel; 10 percent stones, 10 percent cobbles, 20 percent gravel; slightly acid (pH 6.4); gradual smooth boundary.
- Bt3—51 to 68 inches; grayish brown (10YR 5/2) very cobbly clay, dark grayish brown (10YR 4/2) moist; very weak fine and medium blocky structure; very hard, firm, very sticky and very plastic; common fine roots; common faint clay films on faces

of peds; common distinct clay films on surfaces of gravel; 10 percent stones, 15 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.4); abrupt smooth boundary.

BC—68 to 72 inches; dark grayish brown (10YR 5/2) very stony clay, very dark grayish brown (10YR 3/2) moist; massive; very hard, firm, very sticky and very plastic; continuous faint clay films on surfaces of gravel; 10 percent stones, 5 percent cobbles, 25 percent gravel; few fine pores; slightly alkaline (pH 7.8).

Lone Rock Series

Taxonomic Class: Sandy-skeletal, mixed, frigid Typic Haplustolls

Typical Pedon

Lone Rock gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; dark grayish brown (10YR 4/2), gravelly sandy loam, very dark grayish brown (10YR 3/2); moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few visible mica fragments as very fine and fine sand; 10 percent cobbles, 20 percent gravel; neutral (pH 6.7); clear smooth boundary.

AC—9 to 13 inches; brown (10YR5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; common fine and few medium roots; few visible mica fragments as very fine and fine sand; 2 percent stones, 5 percent cobbles, 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

C1—13 to 28 inches; yellowish brown (10YR 5/4) very gravelly loamy sand, dark yellowish brown (10YR 3/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common visible mica fragments as fine and very fine sand; 7 percent cobbles, 45 percent gravel; neutral (pH 6.8); gradual wavy boundary.

C2—28 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 10 percent cobbles, 60 percent gravel; neutral (pH 6.8).

Lonniebee Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Lonniebee channery loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; slightly decomposed needles, twigs, and leaves.

E—1 to 11 inches; light brownish gray (10YR 6/2) channery loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and few medium pores; 5 percent angular stones, 5 percent flagstones, 20 percent channers; slightly acid (pH 6.2) gradual smooth boundary.

Bt1—11 to 19 inches; brown (10YR 5/3) very flaggy clay loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common very fine and few fine and medium pores; common faint clay films on faces of peds and channers; 25 percent flagstones, 25 percent channers; moderately acid (pH 5.8); clear smooth boundary.

Bt2—19 to 33 inches; light yellowish brown (10YR 6/4) very flaggy clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard,

firm, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common very fine and few fine and medium pores; common distinct clay films on faces of peds and channers; 30 percent flagstones, 25 percent channers; moderately acid (pH 5.6); gradual wavy boundary.

Cr—33 to 38 inches; weathered and fractured sandstone bedrock.

R—38 to 60 inches; hard sandstone bedrock.

Lowder Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, nonacid Typic Cryaquepts

Typical Pedon

Lowder very cobbly loam, very bouldery (Colors are for moist soil unless otherwise noted.)

Oe—2 to 0 inches; very dark brown (10YR 2/2) gravelly mucky peat, very dark gray (10YR 3/1) dry; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; 5 percent cobbles, 10 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

A—0 to 2 inches; black (10YR 2/1) gravelly mucky loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 5 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

Bg1—2 to 7 inches; very dark grayish brown (10YR 3/2) very cobbly sandy clay loam, grayish brown (10YR 5/2) dry; common medium faint dark gray (5Y 4/1) redox depletions; moderate medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bg2—7 to 12 inches; dark grayish brown (10YR 4/2) very cobbly sandy clay loam, light brownish gray (10YR 6/2) dry; common medium faint dark gray (5Y 4/1) redox depletions and few fine faint reddish yellow (7.5YR 6/6) redox concentrations; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine interstitial pores; 25 percent cobbles, 20 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

Bg3—12 to 21 inches; dark grayish brown (2.5Y 4/2) very cobbly coarse sandy loam, light brownish gray (10YR 6/2) dry; few medium faint very dark gray (5Y 3/1) redox depletions and common fine distinct reddish yellow (7.5YR 6/6) redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine tubular pores; 20 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.

Bg4—21 to 33 inches; dark brown (10YR 3/3) very gravelly sandy clay loam, light olive brown (2.5Y 5/4) dry; common distinct very dark gray (5Y 3/1) redox depletions, many distinct strong brown (7.5YR 5/8) redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 15 percent cobbles, 35 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.

BCg—33 to 60 inches; brown (10YR 4/3) very gravelly sandy clay loam, light olive brown (2.5Y 5/4) dry; common medium distinct very dark gray (5Y 3/1) redox depletions, few fine distinct strong brown (7.5YR 5/8) redox concentrations; massive; very hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 15 percent cobbles, 40 percent gravel; neutral (pH 6.6).

Lowland Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Vitrandic Haplocryolls

Typical Pedon

Lowland ashy loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 12 inches; dark gray (10YR 4/1) ashy loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 6.8); clear smooth boundary.
- Bw—12 to 20 inches; grayish brown (10YR 5/2) gravelly ashy sandy loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine pores; 10 percent cobbles, 20 percent gravel; neutral (pH 7.2); clear smooth boundary.
- BC—20 to 38 inches; light gray (10YR 6/1) very cobbly ashy sandy loam, dark grayish brown (10YR 4/2) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 10 percent stones, 15 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.
- C—38 to 60 inches; light gray (10YR 7/1) very stony ashy loamy sand, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 15 percent stones, 20 percent cobbles, 20 percent gravel; slightly alkaline (pH 7.4).

Lumpgulch Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Lumpgulch gravelly sandy clay loam, bouldery (Colors are for dry soil unless otherwise noted.)

- Oi—1 to 0 inch; partially decomposed needles, twigs, and leaves.
- A—0 to 2 inches; brown (10YR 4/3) gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, few medium and coarse roots; many very fine and fine and few medium pores; 15 percent gravel; neutral (pH 7.0); clear smooth boundary.
- E—2 to 7 inches; light brownish gray (10YR 6/2) gravelly sandy clay loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, few medium and coarse roots; many very fine and few fine tubular and interstitial pores; 25 percent gravel; neutral (pH 6.6); clear smooth boundary.
- Bt—7 to 22 inches; light olive brown (2.5Y 5/4) gravelly sandy clay loam, olive brown (2.5Y 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and on faces of peds; 30 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Cr—22 to 27 inches; light olive gray decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 6.7).
- R—27 to 60 inches; hard granite bedrock.

Maciver Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Calcic Argicryolls

Typical Pedon

Maciver loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 7 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; few very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); gradual wavy boundary.
- Bt—7 to 11 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; few very fine and fine tubular pores; few faint clay films on faces of peds; 5 percent cobbles, 35 percent gravel; neutral (pH 7.2); clear smooth boundary.
- Bk1—11 to 23 inches; pale yellow (2.5Y 7/4) very gravelly clay loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; few very fine and fine tubular pores; 5 percent cobbles, 35 percent gravel; many medium segregated masses of lime; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.
- Bk2—23 to 30 inches; light yellowish brown (2.5Y 6/4) very gravelly clay loam, light olive brown (2.5Y 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine tubular pores; 10 percent cobbles, 35 percent gravel; many medium segregated masses of lime; violent effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.
- Bk3—30 to 60 inches; pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine tubular pores; 15 percent cobbles, 40 percent gravel; many medium segregated masses of lime; violently effervescent; moderately alkaline (pH 8.2).

Maiden Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Typic Calciustolls

Typical Pedon

Maiden very gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles, 35 percent gravel; disseminated lime; few faint coats of lime on undersides of rock fragments; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.
- Ak—4 to 7 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 15 percent cobbles, 40 percent gravel; disseminated lime; common fine masses of light gray (10YR 7/2) lime; few faint lime coats on surface of fragments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- Bk1—7 to 18 inches; light gray (10YR 7/2) very cobbly loam, light brownish gray (10YR 6/2) moist; moderate fine and medium subangular blocky structure; slightly

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hard, friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and common fine interstitial and tubular pores; 25 percent cobbles, 30 percent gravel; disseminated lime; many medium masses and threads of white (10YR 8/2) lime; common distinct lime casts on surfaces of fragments; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk2—18 to 26 inches; light brownish gray (10YR 6/2) extremely gravelly loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common or few very fine interstitial and tubular pores; 20 percent cobbles, 40 percent gravel; disseminated lime; many medium masses and threads of white (10YR 8/2) lime; many prominent lime casts on surfaces of fragments; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

R—26 to 60 inches; light gray (10YR 7/2) hard limestone.

Mannixlee Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Mannixlee clay loam (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed organic matter.

A1—2 to 9 inches; very dark gray (10YR 3/1) clay loam, dark gray (10YR 4/1) dry; common medium distinct dark brown (7.5YR 4/4) redox concentrations; moderate medium granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular and discontinuous irregular pores; neutral (pH 7.2); gradual smooth boundary.

A2—9 to 16 inches; very dark gray (10YR 3/1) clay loam, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine discontinuous irregular and common very fine tubular pores; neutral (pH 7.2); gradual smooth boundary.

A3—16 to 25 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; common medium distinct dark brown (7.5YR 4/4) redox concentrations; moderate medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular and few very fine and fine discontinuous irregular pores; neutral; (pH 7.2); gradual smooth boundary.

Bw—25 to 45 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; many medium distinct dark brown (7.5YR 4/4) redox concentrations; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine discontinuous irregular and few fine tubular pores; neutral (pH 6.6); abrupt smooth boundary.

2Cg—45 to 60 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, light brownish gray (10YR 6/2) dry; single grain; loose, nonsticky and nonplastic; 35 percent cobbles, 30 percent gravel; neutral (pH 7.2).

Marcel Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Oxyaquic Argicryolls

Typical Pedon

Marcel gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

Oe—2 inches to 0; decomposed leaves and roots.

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- A1—0 to 2 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate very fine and fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.
- A2—2 to 9 inches; very dark gray (10YR 3/1) gravelly loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- A3—9 to 18 inches; very dark grayish brown (10YR 3/2) very gravelly loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent cobbles, 25 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- Bt1—18 to 24 inches; brown (10YR 4/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine interstitial pores; few faint clay films on faces of peds; 5 percent cobbles, 40 percent gravel; slightly acid (pH 6.4); gradual irregular boundary.
- Bt2—24 to 42 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; few faint strong brown (7.5YR 5/6) redox concentrations; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine interstitial pores; few faint clay films on faces of peds; 10 percent cobbles, 35 percent gravel; neutral (pH 6.6); gradual irregular boundary.
- Bt3—42 to 60 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; common distinct strong brown (7.5YR 5/6) redox concentrations; moderate coarse prismatic structure; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; common very fine tubular pores; few faint clay films on faces of peds; 10 percent cobbles, 35 percent gravel; neutral (pH 6.6).

Marcetta Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Pachic Haplocryolls

Typical Pedon

Marcetta gravelly loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 10 inches; dark gray (7.5YR 4/1) gravelly loam, black (7.5YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 30 percent gravel; neutral; gradual smooth boundary.
- A2—10 to 17 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 30 percent gravel; neutral; gradual wavy boundary.
- A3—17 to 25 inches; brown (10YR 5/3) very gravelly loam, dark brown with streaks of very dark brown (10YR 3/3 and 10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine tubular pores; 40 percent gravel; neutral; gradual wavy boundary.

- E—25 to 33 inches; light gray (10YR 7/2) very gravelly loam, dark grayish brown (7.5YR 4/2) moist; weak coarse subangular blocky structure; common fine pores; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common fine tubular pores; 50 percent gravel; neutral; gradual wavy boundary.
- E/B—33 to 48 inches; light gray (10YR 7/2) and very pale brown (10YR 7/3) very gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; sand grains clear and unstained with few patches of clay film and clay flow; few very fine roots; common fine tubular pores; 55 percent gravel; neutral; gradual smooth boundary.
- C—48 to 70 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 65 percent coarse fragments including angular fragments ranging from stone to gravel size; neutral.

Mariel Series

Taxonomic Class: Euic Typic Cryohemists

Typical Pedon

Mariel peat (Colors are for moist soil unless otherwise noted.)

- Oe1—0 to 7 inches; black (10YR 2/1) rubbed and pressed hemic material; about 100 percent unrubbed fibers, 40 percent rubbed; many very fine, fine, and medium roots; strongly acid (pH 5.4); gradual smooth boundary.
- Oe2—7 to 14 inches; very dark brown (10YR 2/2) rubbed and pressed hemic material; about 90 percent unrubbed fibers; 30 percent rubbed; many very fine and fine roots; strongly acid (pH 5.4); clear wavy boundary.
- Oe3—14 to 34 inches; very dark gray (10YR 3/1) rubbed and pressed hemic material; about 60 percent unrubbed fibers, 25 percent rubbed; many very fine roots; strongly acid (pH 5.4); clear smooth boundary.
- Oa—34 to 60 inches; very dark brown (10YR 2/2) rubbed and pressed sapric material; about 40 percent unrubbed fibers, 10 percent rubbed; many very fine roots; strongly acid (pH 5.2).

Martinsdale Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Martinsdale gravelly loam (Colors are for dry soil unless otherwise noted.)

- Ap—0 to 6 inches; dark brown (10YR 4/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; hard, friable, moderately sticky and moderately plastic; 15 percent fine gravel; neutral (pH 6.6); clear wavy boundary.
- Bt1—6 to 10 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure parting to moderate medium blocky; hard, friable, moderately sticky and moderately plastic; many distinct dark brown (10YR 3/3) clay films on faces of peds; neutral (pH 6.6); clear smooth boundary.
- Bt2—10 to 14 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure parting to weak fine granular; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots with some concentration between prisms; many

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distinct dark brown (10YR 3/3) clay films on faces of peds; neutral (pH 7.3); clear wavy boundary.

Btk—14 to 17 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; few faint clay films on faces of peds; slightly effervescent; few fine masses of lime; slightly alkaline (pH 7.4); abrupt broken boundary.

Bk1—17 to 36 inches; white (10YR 8/2) sandy clay loam, light gray (10YR 7/2) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common roots in upper part, few in lower part; lime disseminated throughout as coarse common masses and as bands; violently effervescent; moderately alkaline (pH 7.9); gradual wavy boundary.

Bk2—36 to 56 inches; pale brown (10YR 6/3) sandy clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; lime segregated in few fine threads and coarse masses; violently effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

BC—56 to 66 inches; light yellowish brown (2.5Y 6/4) gravelly sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable; nonsticky and nonplastic; strongly effervescent; moderately alkaline (pH 8.4).

Maurice Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Maurice loam, stony (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; very dark gray (10YR 3/1) moist coats; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; 0.05 percent stones on surface, 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—3 to 13 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; black (10YR 2/1) coats, moist; weak medium prisms parting to moderate fine and medium blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bw1—13 to 24 inches; brown (10YR 4/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; 10 percent cobbles, 30 percent gravel; moderately alkaline (pH 8.2); gradual wavy boundary.

Bw2—24 to 60 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, grayish brown (10YR 5/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 10 percent cobbles, 40 percent gravel; slightly alkaline (pH 7.8)

Mawspring Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Mawspring very channery loam (Colors are for dry soil unless otherwise noted.)

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- A—0 to 6 inches; dark grayish brown (10YR 4/2) very channery loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; very friable, soft, nonsticky and slightly plastic; many very fine and fine roots; many fine irregular pores; 35 percent channers; slightly acid (pH 6.4); clear smooth boundary.
- Bw—6 to 13 inches; light yellowish brown (10YR 6/4) very channery loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 45 percent channers; neutral (pH 6.6); gradual wavy boundary.
- BC—13 to 33 inches; light yellowish brown (10YR 6/4) extremely channery loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; 65 percent channers; neutral (pH 6.6); gradual irregular boundary.
- C—84 to 60 inches; light olive brown (2.5Y 5/4) extremely channery sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine irregular pores; 65 percent channers; neutral (pH 6.6).

Maxville Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Maxville gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 11 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown 910YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 15 percent gravel; neutral (pH 6.9); clear wavy boundary.
- Bw—11 to 19 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; 10 percent gravel; neutral (pH 7.2); abrupt wavy boundary.
- Bk1—19 to 28 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; 10 percent gravel; lime coats on gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- Bk2—28 to 34 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; 25 percent gravel; lime coats on gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.
- 2C—34 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; 5 percent cobbles, 50 percent gravel; strongly effervescent; slightly alkaline (pH 7.5).

Mccabe Series

Taxonomic Class: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Aeric Fluvaquents

Typical Pedon

Mccabe loam (Colors are for moist soil unless otherwise noted.)

- A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine tubular pores; neutral (pH 7.2); clear smooth boundary.
- C1—2 to 4 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine interstitial pores; slightly alkaline (pH 7.4); clear smooth boundary.
- C2—4 to 9 inches; dark grayish brown (10YR 4/2) sandy loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine tubular pores; slightly alkaline (pH 7.6); gradual wavy boundary.
- C3—9 to 16 inches; dark grayish brown (10YR 4/2) sandy loam consisting of strata of loam, fine sandy loam and sandy loam, grayish brown (10YR 5/2) dry; many medium distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; few fine tubular pores; slightly alkaline (pH 7.6); clear wavy boundary.
- C4—16 to 36 inches; dark grayish brown (10YR 4/2) fine sandy loam consisting of strata of loam and fine sandy loam, grayish brown (10YR 5/2) dry; many medium distinct yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) dry redox concentrations; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; slightly alkaline (pH 7.6); clear wavy boundary.
- 2C5—36 to 60 inches; very dark grayish brown (10YR 3/2) very gravelly loamy sand, grayish brown (10YR 5/2) dry; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; 20 percent cobbles, 35 percent gravel; slightly alkaline (pH 7.6).

Meadowcreek Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Fluvaquentic Haplustolls

Typical Pedon

Meadowcreek loam (Colors are for dry soil unless otherwise noted.)

- A_p—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine roots; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- A₂—5 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many fine tubular and interstitial pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- A₃—10 to 15 inches; gray (10YR 5/1) silt loam, very dark gray (10YR 3/1) moist; weak medium prismatic structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; slightly alkaline (pH 7.4); clear smooth boundary.

- Bg1—15 to 27 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; few fine distinct brown (7.5YR 5/3) moist redox concentrations; weak coarse prismatic structure; few thin very dark grayish brown (10YR 3/2) moist, layers of soils; slightly hard, friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; neutral (pH 7.0); gradual smooth boundary.
- Bg2—27 to 31 inches; gray (10YR 6/1) sandy loam, dark grayish brown (10YR 4/2) moist; common fine distinct brown (7.5YR 5/4) moist redox concentrations; weak coarse prismatic structure; slightly hard, friable, nonsticky and moderately plastic; common very fine roots; many very fine tubular and interstitial pores; few gravel; neutral (pH 7.2); clear smooth boundary.
- 2C—31 to 60 inches; variegated colors, very gravelly sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 55 percent gravel; neutral (pH 7.2).

Mikesell Series

Taxonomic Class: Fine, smectitic Eutric Haplocryalfs

Typical Pedon

Mikesell stony silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 0.5 inch; undecomposed needles, cones, twigs, and leaves; moderately acid (pH 6.0 chlorphenol red); abrupt wavy boundary.
- Oe—0.5 to 1 inch; dark grayish brown (10YR 4/2) partially decomposed needles, twigs, leaves, and cones, very dark brown (10YR 2/2) moist; slightly matted; abrupt wavy boundary.
- Oa—1 to 1.5 inches; dark gray (10YR 4/1) decomposed organic matter, black (10YR 2/1) moist; strongly acid (pH 5.3); abrupt wavy boundary.
- E1—1.5 to 5 inches; light brownish gray (10YR 6/2) stony silt loam, grayish brown (10YR 5/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; common very fine tubular pores; common fine rounded iron and manganese concretions; 10 percent stones, 10 percent gravel; moderately acid (pH 5.6); abrupt smooth boundary.
- E2—5 to 12 inches; light brownish gray (10YR 6/2) stony silt loam, dark grayish brown (10YR 4/2) moist; weak very coarse and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium, coarse, and very coarse roots; common very fine tubular pores; few fine rounded iron and manganese concretions; 10 percent stones, 10 percent gravel; moderately acid (pH 5.7); abrupt irregular boundary.
- B/E—12 to 16 inches; 90 percent light yellowish brown (10YR 6/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; 10 percent light gray (10YR 7/2) cobbly loam, grayish brown (10YR 5/2) moist E material that occurs between peds and as coats on and between peds; weak medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium, coarse, and very coarse roots; common very fine tubular pores; few thin clay films on faces of peds and in pores; few fine rounded iron and manganese concretions: 15 percent cobbles, 10 percent gravel; moderately acid (pH 5.7); abrupt wavy boundary.
- Bt1—16 to 32 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; few medium prominent strong brown (7.5YR 5/8) and reddish brown (2.5YR 4/4), dark reddish brown (2.5YR 3/4) moist spots of weathering rock material; weak medium prismatic structure parting to strong fine and medium subangular and angular blocky; very hard, very firm, moderately sticky and

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moderately plastic; few very fine and fine roots mostly between pedes; few medium, coarse, and very coarse roots; few very fine tubular pores; continuous prominent clay films of brown (10YR 5/3), dark brown (10YR 4/3) moist, and dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2) moist; 10 percent cobbles, 20 percent gravel; moderately acid (pH 5.8); clear, wavy boundary.

Bt2—32 to 46 inches; light yellowish brown (2.5Y 6/3) cobbly clay, olive brown (2.5Y 4/3) moist; strong fine and medium angular blocky structure; very hard, very firm, moderately sticky and moderately plastic; few very fine and fine roots mostly between pedes; few medium, coarse, and very coarse roots; few very fine tubular pores; continuous distinct clay films on faces of pedes and in pores; clay film colors of brown (10YR 5/3), dark brown (10YR 4/3) moist; 15 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt3—46 to 60 inches; light brownish gray (2.5Y 6/2) cobbly clay loam, grayish brown (2.5Y 5/2) moist; strong fine angular blocky structure; very hard, firm, moderately sticky and moderately plastic; few fine roots; few very fine tubular pores; many prominent and distinct clay films of yellowish brown (10YR 5/4) on faces of pedes and in pores; light olive brown (2.5Y 5/3) weathered rock fragments, olive brown (2.5Y 4/3) moist; 20 percent cobbles, 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt4—60 to 66 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; strong very thick platy structure parting to weak coarse angular blocky; very hard, firm, moderately sticky and moderately plastic; few very fine roots; few very fine tubular pores; few distinct very dark brown (10YR 2/2) organic stains on faces of pedes; many faint clay films on faces of pedes; 5 percent cobbles, 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

R—66 inches; shale or fine grained sandstone bedrock.

Minestope Series

Taxonomic Class: Sandy-skeletal, mixed, shallow Ustic Haplocryolls

Typical Pedon

Minestope gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; brown (10YR 4/3) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; 15 percent fine subangular pea gravel; slightly acid (pH 6.2), clear smooth boundary.

Bw—7 to 13 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; 30 percent fine subangular pea gravel; neutral (pH 6.6); clear wavy boundary.

BC—13 to 18 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 45 percent fine subangular pea gravel; neutral (pH 6.6); clear wavy boundary.

Cr—18 to 23 inches; soft weathered granite bedrock.

R—23 to 60 inches; hard granite bedrock.

Mocmont Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Mocmont very gravelly loam (Colors are for dry soil unless otherwise noted.)

- Oi—2 inches to 0; forest litter of undecomposed and partially decomposed needles, twigs, cones, and leaves.
- E—0 to 9 inches; very pale brown (10YR 7/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine, fine, and medium and few coarse roots; many very fine pores; 10 percent angular cobbles, 30 percent angular gravel; slightly acid (pH 6.2); clear wavy boundary.
- E/Bt—9 to 12 inches; E part (75 percent) is very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist tongues; B part (25 percent) is light brownish gray (10YR 6/2) very gravelly heavy loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure parting to moderate very fine granular; hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium and common coarse roots; many very fine and fine pores; 15 percent angular cobbles, 35 percent angular gravel; moderately acid (pH 5.6); gradual wavy boundary.
- Bt1—12 to 24 inches; light yellowish brown (10YR 6/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine and common medium and coarse roots; many very fine and fine pores; continuous distinct clay films on faces of peds; common faint clay films on rock fragments; 20 percent angular cobbles, 50 percent angular gravel; moderately acid (pH 5.6); gradual wavy boundary.
- Bt2—24 to 38 inches; pale brown (10YR 6/3) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine, common fine and medium, and few coarse roots; many very fine and fine pores; many faint thin clay films on faces of peds; common faint clay films on rock fragments; 25 percent angular cobbles, 55 percent angular gravel; moderately acid (pH 5.6); diffuse wavy boundary.
- BC—38 to 60 inches; pale brown (10YR 6/3) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine pores; 45 percent angular cobbles, 40 percent angular gravel; moderately acid (pH 5.8).

Mohaggin Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Mohaggin bouldery ashy very fine sandy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; undecomposed needles and twigs.
- Oe—2 to 5 inches; partially decomposed needles and twigs.
- A—5 to 14 inches; light yellowish brown (10YR 6/4) bouldery ashy very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common very fine tubular pores; 10 percent boulders, 5 percent cobbles, 15 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

2Bw—14 to 22 inches; brown (10YR 4/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; common fine and medium tubular pores; 1 percent boulders, 15 percent cobbles, 30 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2BC—22 to 32 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine tubular pores; 1 percent boulders, 15 percent cobbles, 30 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

2C—32 to 60 inches; very pale brown (10YR 7/3) very cobbly loamy sand, pale brown (10YR 6/3) moist; weak medium subangular blocky structure parting to single grain; soft, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; common very fine interstitial pores; 1 percent boulders, 20 percent cobbles, 20 percent gravel; slightly acid (pH 6.1).

Mollet Series

Taxonomic Class: Fine, mixed, superactive Ustic Argicryolls

Typical Pedon

Mollet loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; many very fine and fine irregular pores; 5 percent gravel; moderately acid (pH 5.6); clear wavy boundary.

A2—7 to 12 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; weak very fine subangular blocky structure; hard, friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; few very fine and fine tubular pores; 10 percent gravel; moderately acid (pH 5.8); abrupt wavy boundary.

Bt1—12 to 16 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

Bt2—16 to 29 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common very fine and few fine and medium roots; common very fine and few fine and medium tubular pores; common distinct clay films on faces of peds; 5 percent cobbles, 10 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Bt3—29 to 60 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and few fine and medium tubular pores; few faint clay films on faces of peds; 5 percent cobbles, 10 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

Monaberg Series

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Monaberg gravelly loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine and fine interstitial pores; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.
- A2—3 to 11 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Bt1—11 to 17 inches; light olive brown (2.5Y 5/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to strong medium subangular blocky; slightly hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; many very fine tubular pores; common distinct clay films on faces of peds; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bt2—17 to 27 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular pores; common faint clay films on faces of peds; 15 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.
- Bt3—27 to 48 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; weak medium and coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common medium pores; few faint clay films on faces of peds; 25 percent gravel; slightly alkaline (pH 7.4); gradual irregular boundary.
- BC—48 to 60 inches; light yellowish brown (2.5Y 6/4) gravelly loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine tubular pores; 30 percent gravel; slightly alkaline (pH 7.4).

Monad Series

Taxonomic Class: Fine-loamy, mixed, superactive Alfic Argicryolls

Typical Pedon

Monad loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 9 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; 15 percent cobbles, gravel; slightly acid (pH 6.2); clear wavy boundary.
- A2—9 to 14 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many very fine and fine and few medium pores; very thin continuous gray (10YR 6/1) skeletal coating faces of peds; 15 percent channers; moderately acid (pH 5.8); gradual wavy boundary.
- Bt/E—14 to 21 inches; Bt part (80 percent) is brown (10YR 5/3) loam, brown (10YR 4/3) moist; E part (20 percent) is gray (10YR 6/1) loam, dark gray (10YR 4/1) moist; weak medium prismatic structure parting to moderate fine subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine and few medium pores;

very thin continuous gray (10YR 6/1) skeletalans coating continuous faint clay films on faces of peds; 10 percent sandstone channers; moderately acid (pH 5.7); clear wavy boundary.

Bt1—21 to 49 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine and medium blocky structure; extremely hard, firm, very sticky and moderately plastic; few very fine and fine roots; many very fine and fine and few medium pores; very thin gray (10YR 6/1) skeletalans coating continuous distinct clay films on faces of peds; 10 percent sandstone channers; moderately acid (pH 5.8); gradual wavy boundary.

Bt2—49 to 74 inches; very pale brown (10YR 7/4) cobbly clay loam, brown (7.5YR 5/4) moist; strong fine and medium blocky structure; extremely hard, firm, very sticky and moderately plastic; many very fine and fine and few medium pores; continuous distinct clay films on faces of peds; 10 percent stones, 15 percent cobbles; slightly alkaline (pH 7.4).

Mooseflat Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive Typic Cryaquolls

Typical Pedon

Mooseflat loam (Colors are for moist soil unless otherwise noted.)

Oe—0 to 2 inches; black (10YR 2/1) moderately decomposed plant material, very dark grayish brown (10YR 3/2) dry; neutral (pH 6.8); clear smooth boundary.

A—2 to 10 inches; black (10YR 2/1) loam, gray (10YR 5/1) dry; many fine distinct yellowish brown (10YR 5/6) redox concentrations; moderate medium granular structure; slightly hard, friable, slightly sticky and moderately plastic; many very fine and fine roots; many very fine and fine pores; neutral (pH 7.2); clear smooth boundary.

Bg—10 to 18 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; common fine distinct dark yellowish brown (10YR 4/6) redox concentrations; weak thin platy structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine pores; neutral (pH 6.8); abrupt smooth boundary.

2BCg—18 to 22 inches; dark gray (10YR 4/1) loamy fine sand, light gray (10YR 7/1) dry; common fine distinct yellowish brown (10YR 5/4) redox concentrations; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine roots; 5 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

2Cg—22 to 60 inches; gray (10YR 5/1) extremely cobbly loamy sand, gray (10YR 6/1) dry; single grain; loose, nonsticky and nonplastic; 35 percent cobbles, 25 percent gravel; neutral (pH 7.2).

Moosejaw Series

Taxonomic Class: Coarse-loamy, mixed, superactive Cumulic Cryaquolls

Typical Pedon

Moosejaw mucky peat (Colors are for moist soil unless otherwise noted.)

Oe—0 to 5 inches; dark brown (10YR 3/3) mucky peat, brown (10YR 4/3) dry; moderately decomposed herbaceous material and trapped sediment; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; moderately acid (pH 5.8); clear smooth boundary.

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Ag—5 to 24 inches; black (N 2.5/) silt loam, very dark gray (10YR 3/1) dry; moderate medium and coarse granular structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; few very fine and fine tubular pores; 2 percent subrounded gravel; slightly acid (pH 6.3); clear smooth boundary.

Cg—24 to 43 inches; black (5Y 2.5/1) stratified loam, silt loam and sandy loam, olive gray (5Y 5/2) dry; weak coarse subangular blocky structure; soft, very friable; slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; 2 percent subrounded gravel; neutral (pH 6.6); abrupt smooth boundary.

2C—43 to 72 inches; olive (5Y 4/4) gravelly loamy coarse sand, light yellowish brown (2.5Y 6/4) dry; single grain; loose, nonsticky and nonplastic; few very fine roots; many interstitial pores; 30 percent subangular fine gravel; few medium distinct dark gray (5Y 4/1) redox depletions; neutral (pH 7.2).

Nieman Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Argicryolls

Typical Pedon

Nieman very cobbly loam, very stony (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent cobbles, 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—4 to 8 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; common faint brown (10YR 4/3) clay films on faces of peds; 25 percent cobbles, 30 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—8 to 13 inches; dark grayish brown (10YR 4/2) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common very fine roots; many very fine and fine interstitial pores; common distinct clay films on faces of peds; 35 percent cobbles, 35 percent gravel, neutral (pH 7.0).

R—13 to 60 inches; hard, fine-grained igneous bedrock.

Nirling Series

Taxonomic Class: Sandy-skeletal, mixed, frigid Oxyaquic Haplustolls

Typical Pedon

Nirling cobbly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; dark brown (10YR 4/3) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 10 percent cobbles, 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—5 to 10 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to

moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 10 percent cobbles, 40 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bw—10 to 15 inches; brown (10YR 5/3) extremely gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots; common very fine and fine interstitial pores; 20 percent cobbles, 50 percent gravel; neutral (pH 7.0); gradual smooth boundary.

2C1—15 to 29 inches; yellowish brown (10YR 5/4) extremely gravelly coarse sand, dark yellowish brown (10YR 3/4) moist; single grain; loose, nonsticky and nonplastic; many very fine roots; 20 percent cobbles, 50 percent gravel; neutral (pH 7.0) gradual smooth boundary.

2C2—29 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly coarse sand, dark yellowish brown (10YR 3/4) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; 35 percent cobbles, 40 percent gravel; neutral (pH 6.8).

Nissler Series

Taxonomic Class: Ashy, glassy Vitrandic Argicryolls

Typical Pedon

Nissler gravelly ashy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; dark grayish brown (10YR 4/2) gravelly ashy loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many fine interstitial and irregular pores; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt—9 to 28 inches; yellowish brown (10YR 5/4) gravelly ashy sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, moderately sticky and very plastic; common fine roots; common fine tubular pores; common distinct clay films on faces of peds; 5 percent cobbles, 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

BC—28 to 60 inches; light yellowish brown (2.5Y 6/3) very gravelly ashy sandy clay loam, light olive brown (2.5Y 5/3) moist; weak coarse subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; few fine roots; common fine irregular pores; 10 percent cobbles, 30 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

R—60 inches; indurated tuffaceous rhyolite.

Nuley Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Calcic Argiustolls

Typical Pedon

Nuley clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 7 inches; grayish brown (10YR 5/2) clay loam, dark brown (10YR 3/3) moist; weak and moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; many fine tubular and few fine void interstitial pores; slightly alkaline (pH 7.6); abrupt smooth boundary.

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Bt—7 to 11 inches; brown (10YR 4/3) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many fine roots; common fine tubular pores; many and common distinct clay films on faces of peds; slightly alkaline (pH 7.4); clear wavy boundary.

Bk1—11 to 15 inches; light gray (10YR 7/1) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many and common fine roots; common and few fine interstitial and few fine tubular pores; 5 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—15 to 24 inches; white (10YR 8/1) sandy loam, light gray (10YR 7/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; many and common fine roots; common fine tubular pores; 5 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2C—24 to 50 inches; grayish brown (2.5Y 5/2) gravelly coarse sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; very few very fine roots; common fine and medium interstitial pores; 25 percent gravel; moderately effervescent; moderately alkaline (pH 8.2); gradual irregular boundary.

R—50 to 60 inches; granitic gneiss bedrock.

Nythar Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Nythar silty clay loam (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 inches; partially decomposed organic matter

A—2 to 16 inches; black (N 2/0) silty clay loam, black (N 2/0) dry; moderate medium granular structure; hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; common fine tubular pores; 5 percent cobbles, 5 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bg1—16 to 25 inches; very dark gray (N 3/0) silty clay loam, gray (10YR 5/1) dry; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; common fine and medium pores; 5 percent cobbles, 5 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bg2—25 to 36 inches; very dark gray (5Y 3/1) silty clay loam, gray (N 5/0) dry; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine and medium pores; 5 percent cobbles, 5 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bg3—36 to 46 inches; dark grayish brown (2.5Y 4/2) silt loam, light gray (5Y 7/1) dry; many medium brownish yellow (10YR 6/6) redox concentrations; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine pores; neutral (pH 7.0); gradual wavy boundary.

Cg—46 to 60 inches; light gray (2.5Y 7/2) cobbly silty clay loam, pale yellow (2.5Y 8/2) dry; many medium yellow (10YR 7/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine pores; 15 percent cobbles, 10 percent gravel; neutral (pH 7.2).

Opitz Series

Taxonomic Class: Coarse-loamy, mixed, superactive Ustic Argicryolls

Typical Pedon

Opitz coarse sandy loam, bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; very dark grayish brown (10YR 3/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) gravelly sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; common distinct clay films on faces of peds; 20 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt2—15 to 22 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine tubular pores; common faint clay films on faces of peds; 30 percent gravel; neutral (pH 6.8); gradual wavy boundary.

BC—22 to 36 inches; grayish brown (10YR 5/2) very gravelly coarse sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 40 percent gravel; neutral (pH 6.8); gradual irregular boundary.

Cr—36 to 57 inches; decomposed granite bedrock (grus) that crushes to very gravelly coarse sand.

R—57 to 60 inches; hard granite bedrock.

Oro Fino Series

Taxonomic Class: Fine-loamy, mixed, superactive Calcic Argicryolls

Typical Pedon

Oro Fino gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and slightly plastic; many fine roots; many fine vesicular and tubular pores; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.

A2—4 to 10 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate very coarse prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; common fine irregular and few fine vesicular and tubular pores; 15 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt—10 to 22 inches; brown (10YR 5/3) gravelly sandy clay loam, brown (10YR 4/3) moist; strong very coarse prismatic structure parting to moderate fine subangular blocky; hard, firm, slightly sticky and moderately plastic; common fine roots; common fine irregular and few fine vesicular and tubular pores; common faint clay skins as bridges between sand grains; 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—22 to 34 inches; light gray (10YR 7/2) gravelly loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; 30 percent gravel; many soft masses of lime; violently effervescent; moderately alkaline (pH 7.9); abrupt wavy boundary.

Bk2—34 to 42 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; loose, nonsticky and nonplastic; few fine roots; common fine irregular pores; 40 percent gravel; common soft masses of lime; strongly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk3—42 to 60 inches; brown (10YR 5/3) extremely gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots in cracks; few fine irregular pores; 60 percent gravel; common soft masses of lime; strongly effervescent; slightly alkaline (pH 7.6).

Ovando Series

Taxonomic Class: Sandy-skeletal, mixed Lamellic Cryorthents

Typical Pedon

Ovando gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

E1—2 to 8 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; common very fine and fine pores; 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

E2—8 to 27 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; common very fine and fine pores; 40 percent gravel; moderately acid (pH 5.8); clear wavy boundary.

E and Bt—27 to 51 inches; E part (80 percent) is very pale brown (10YR 7/4) very gravelly loamy coarse sand, yellowish brown (10YR 5/4) moist; B part (20 percent) is brown (10YR 5/3) sandy loam lamellae 1/8- to 1/2-inch thick, dark yellowish brown (10YR 4/4) moist; texture mixed is very gravelly loamy coarse sand; single grain; loose, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; 5 percent cobbles, 45 percent gravel; moderately acid (pH 5.8); gradual smooth boundary.

C—51 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent cobbles, 55 percent gravel; moderately acid (pH 5.8).

Pappascreek Series

Taxonomic Class: Coarse-loamy, mixed, superactive Aquic Cumulic Haplocryolls

Typical Pedon

Pappascreek mucky peat (Colors are for dry soil unless otherwise noted.)

Oe—0 to 3 inches; brown (10YR 5/3) mucky peat, very dark grayish brown (10YR 3/2) moist; moderately decomposed herbaceous material and fine-grained sediment; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; moderately acid (pH 5.6); clear smooth boundary.

A1—3 to 18 inches; olive gray (5Y 4/2) loam, very dark gray (5Y 3/1) moist; moderate medium granular structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and common fine and medium roots; 1 percent fine subangular gravel, slightly acid (pH 6.4); gradual smooth boundary.

A2—18 to 27 inches; dark grayish brown (2.5Y 4/2) loam with several thin strata of gravelly coarse sand, very dark grayish brown (2.5Y 3/2) moist; weak medium

subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine and fine tubular pores; common fine distinct yellowish brown (10YR 5/6) redox concentrations; 10 percent fine subangular gravel; neutral (pH 6.8); gradual wavy boundary.

Cg—27 to 72 inches; gray (5Y 5/1) sandy loam with strata of gravelly coarse sand, dark gray (5Y 4/1) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 5 percent fine gravel; neutral (pH 7.0).

Passmore Series

Taxonomic Class: Coarse-loamy, mixed, superactive, frigid Oxyaquic Haplustolls

Typical Pedon

Passmore mucky peat (Colors are for dry soil unless otherwise noted.)

Oe—0 to 2 inches; very dark grayish brown (10YR 3/2) mucky peat, very dark brown (10YR 2/2) moist; moderately decomposed herbaceous material and fine-grained sediment; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; slightly alkaline (pH 7.6), clear smooth boundary.

A1—2 to 10 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; few very fine and fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A2—10 to 15 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; moderate fine and medium granular structure; moderately hard, friable, moderately sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bw—15 to 24 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 2 percent subrounded gravel; slightly alkaline (pH 7.6); gradual smooth boundary.

BC—24 to 34 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; 2 percent fine subangular gravel; few fine dark yellowish brown (10YR 4/6) redox concentrations; slightly alkaline (pH 7.4); gradual wavy boundary.

2C—34 to 72 inches; variegated pale brown (10YR 6/3) and light gray (10YR 7/2) very gravelly coarse sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many interstitial pores; 35 percent, mainly fine, gravel; neutral (pH 7.0).

Peeler Series

Taxonomic Class: Fine-loamy, mixed, superactive Ustic Glossocryalfs

Typical Pedon

Peeler gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed organic material consisting mainly of needles, bark, and twigs.

Oe—2 to 3 inches; partially decomposed organic material like that of the horizon above.

Soil Survey of Deerlodge National Forest Area, Montana

- E—3 to 11 inches; light brownish gray (10YR 6/2) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; 15 percent gravel, mostly fine angular granite fragments; slightly acid (pH 6.2); gradual wavy boundary.
- E/B—11 to 19 inches; (E part) light brownish gray (10YR 6/2) gravelly coarse sandy loam, grayish brown (10YR 5/2) moist; (B part) brown (7.5YR 5/4) gravelly coarse sandy clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure parting to weak medium granular; slightly hard, very friable, nonsticky and nonplastic; clay films on some faces of peds and in some root channels and pores; the horizon consists of seams and nodules of material like that of the underlying horizon embedded in a lighter-colored matrix like that of the overlying horizon; 15 percent fine angular granite gravel; slightly acid (pH 6.4); gradual wavy boundary.
- Bt—19 to 35 inches; brown (7.5YR 5/4) gravelly coarse sandy clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; nearly continuous clay films on faces of peds and fillings in root channels and pores; 25 percent fine angular gravel; slightly acid (pH 6.4); gradual wavy boundary.
- BCt—35 to 43 inches; brown (7.5YR 5/4) gravelly coarse sandy loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; peds are extremely hard, very friable; few faint clay films on some faces of peds and in some root channels and pores; 25 percent fine angular granite gravel; slightly acid (pH 6.4); gradual wavy boundary.
- C—43 to 63 inches; light brown (7.5YR 6/4) gravelly coarse sandy loam, brown (7.5YR 5/4) moist; massive; extremely hard, very friable, nonsticky and nonplastic; 25 percent angular granite gravel; neutral (pH 6.6).

Pensore Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Lithic Calcicustepts

Typical Pedon

Pensore gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 20 percent angular gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- Bk—4 to 15 inches; light gray (10YR 7/2) extremely gravelly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; 15 percent angular cobbles, 45 percent angular gravel; disseminated lime; continuous faint lime coats on top of coarse fragments; continuous prominent lime casts on undersides of coarse fragments; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.
- R—15 to 60 inches; hard limestone bedrock with a few fractures; few very fine roots in fractures.

Perma Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Perma gravelly loam (Colors are for dry soil unless otherwise noted.)

Soil Survey of Deerlodge National Forest Area, Montana

- A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine pores; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.
- A2—6 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine pores; 30 percent gravel; neutral (pH 7.2); clear wavy boundary.
- Bw1—12 to 22 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine pores; 15 percent cobbles, 35 percent gravel; neutral (pH 7.2); gradual wavy boundary.
- Bw2—22 to 36 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine pores; 15 percent cobbles, 40 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.
- BC—36 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 20 percent cobbles, 50 percent gravel; slightly alkaline (pH 7.4).

Petty Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Haplocrypts

Typical Pedon

Petty gravelly ashy loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 3 inches; undecomposed and slightly decomposed forest litter.
- Bw—3 to 15 inches; light yellowish brown (10YR 6/4) gravelly ashy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine pores; 20 percent gravel; moderately acid (pH 6.0); clear smooth boundary.
- 2E—15 to 27 inches; very pale brown (10YR 7/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine pores; 5 percent cobbles, 35 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.
- 2E and Bt—27 to 39 inches; E part (70 percent) is very pale brown (10YR 7/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; B part (30 percent) is strong brown (7.5YR 5/6) fine sandy loam lamellae 1/8- to 1/2-inch thick, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine and fine pores; 10 percent cobbles, 45 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- 2C—39 to 60 inches; very pale brown (10YR 7/4) extremely gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine pores; 15 percent cobbles, 50 percent gravel; slightly acid (pH 6.4).

Philipsburg Series

Taxonomic Class: Fine-loamy, mixed, superactive Calcic Argicryolls

Typical Pedon

Philipsburg silt loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.8); clear wavy boundary.
- A2—5 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.
- Bt1—14 to 20 inches; brown (10YR 5/3), silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; many distinct patchy clay films on faces of peds; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.
- Bt2—20 to 32 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine dendritic tubular pores; common distinct patchy clay films on faces of peds; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.
- Bk1—32 to 43 inches; very pale brown (10YR 8/4), gravelly loam, very pale brown (10YR 7/4) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine irregular pores; 25 percent gravel; disseminated lime; common fine and medium soft masses of lime; many distinct continuous lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- Bk2—43 to 60 inches; very pale brown (10YR 8/3), very gravelly sandy loam, very pale brown (10YR 7/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine irregular pores; 15 percent cobbles, 35 percent gravel; disseminated lime; common fine and medium soft masses of lime; many distinct continuous lime coats on rock fragments; violently effervescent; moderately alkaline (pH 8.0).

Phillcher Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Haplocrypts

Typical Pedon

Phillcher ashy silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 inches to 2; undecomposed and slightly decomposed forest litter.
- Bw1—2 to 12 inches; yellowish brown (10YR 5/4) ashy silt loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; 10 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- 2Bw2—12 to 26 inches; light gray (2.5Y 7/2) very gravelly sandy loam, grayish brown (2.5Y 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 5 percent cobbles, 45 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

2C—26 to 62 inches; light gray (2.5Y 7/2) extremely gravelly sandy loam, grayish brown (2.5Y 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent cobbles, 55 percent gravel; moderately acid (pH 6.0).

Placerton Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Placerton gravelly sandy clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; grayish brown (10YR 5/2) gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 20 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt1—7 to 11 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and few fine tubular and interstitial pores; many faint clay films on faces of ped; 30 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt2—11 to 21 inches; brown (10YR 5/3) gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains and on faces of ped; 25 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bk—21 to 29 inches; very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular and interstitial pores; 30 percent gravel; disseminated lime; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.3); clear smooth boundary.

Cr—29 to 58 inches; grayish brown (2.5Y 5/2) decomposed granite bedrock (grus) that crushes to very gravelly coarse sand or loamy coarse sand; slightly alkaline (pH 7.8).

R—58 to 60 inches; hard granite bedrock.

Poin Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Poin very channery sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; grayish brown (10YR 5/2) very channery sandy loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; 15 percent flagstones, 25 percent flat angular gravel; neutral (pH 7.2); abrupt wavy boundary.

Bw1—5 to 12 inches; brown (10YR 5/3) very channery sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic;

many very fine and fine roots; common very fine and fine tubular pores; 15 percent flagstones, 45 percent flat angular gravel; neutral (pH 7.2); clear smooth boundary.
Bw2—12 to 19 inches; pale brown (10YR 6/3) extremely flaggy sandy loam, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 20 percent flat angular cobbles, 60 percent flagstones; neutral (pH 7.3); gradual irregular boundary.
R—19 to 60 inches; fractured gneiss-schist bedrock; few fine roots in some cracks.

Poronto Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Endoaquolls

Typical Pedon

Poronto loam (Colors are for moist soil unless otherwise noted.)

Oi—3 inches to 0; slightly decomposed organic matter.

A—0 to 10 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; common fine distinct strong brown (7.5YR 5/8) redox concentrations; moderate medium granular structure; very hard, firm, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bg1—10 to 16 inches; dark gray (5YR 4/1) very gravelly silty clay loam, light gray (5YR 7/1) dry; many medium distinct strong brown (7.5YR 5/8) redox concentrations; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 40 percent gravel; slightly alkaline (pH 7.4); gradual wavy boundary.

Bg2—16 to 28 inches; dark gray (5YR 4/1) very gravelly clay loam, light gray (5YR 7/1) dry; many fine distinct yellowish red (5YR 4/6) redox concentrations; weak medium subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common very fine and fine roots; many very fine and fine interstitial pores; 40 percent gravel; neutral; (pH 7.2); gradual wavy boundary.

Bg3—28 to 60 inches; dark gray (5YR 4/1) very gravelly sandy loam, light gray (5YR 6/1) dry; few fine distinct strong brown (7.5YR 5/8) redox concentrations; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine irregular pores; 45 percent gravel; neutral (pH 7.2).

Quigley Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Quigley loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine and fine tubular pores; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bw—3 to 10 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, moderately sticky and moderately plastic; many fine roots; many very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bk1—10 to 13 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly

sticky and slightly plastic; many fine roots; common fine irregular and few fine tubular pores; 5 percent gravel; many fine and medium masses of lime; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—13 to 23 inches; white (10YR 8/1) gravelly loam, light gray (10YR 7/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many fine tubular and irregular pores; 5 percent cobbles, 10 percent gravel; disseminated lime; continuous faint lime coats on rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.

Bk3—23 to 45 inches; light gray (2.5Y 7/2) gravelly loam; light yellowish brown (2.5Y 6/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; many very fine and fine irregular and common fine tubular pores; 5 percent cobbles, 15 percent gravel; disseminated lime; continuous faint lime coats on rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.

2Bk4—45 to 60 inches; very pale brown (10YR 7/3) very cobbly sandy loam; pale brown (10YR 6/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many fine irregular pores; 20 percent cobbles, 20 percent gravel; disseminated lime, continuous faint lime coats on undersides of rock fragments; violently effervescent; strongly alkaline.

Ratiopeak Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Argicryolls

Typical Pedon

Ratiopeak gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly loam, black (10YR 2/1) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 20 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

A2—3 to 10 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; strong medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; 25 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 15 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium pores; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; 40 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bt2—15 to 26 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 5/3) moist; strong medium prismatic structure parting to moderate medium subangular blocky; hard, firm, moderately sticky and moderately plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; common distinct grayish brown (10YR 5/2) clay films on faces of peds; 40 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bt3—26 to 35 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and fine and few medium pores; few distinct clay films on faces of peds; 45 percent gravel; slightly alkaline (pH 7.8); gradual smooth boundary.

Bk—35 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard,

friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine interstitial and tubular pores; 5 percent cobbles, 50 percent gravel; common fine masses and threads of lime, common distinct lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.3).

Raynesford Series

Taxonomic Class: Fine-loamy, carbonatic Calcic Haplocryolls

Typical Pedon

Raynesford loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 12 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; strong fine and medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many fine roots; many fine and medium interstitial pores; 5 percent limestone gravel; slightly alkaline (pH 7.4); clear wavy boundary.
- A2—12 to 16 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and common fine tubular pores; 5 percent limestone gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.
- Bk1—16 to 28 inches, very pale brown (10YR 8/2) clay loam, light brownish gray (10YR 6/2) moist; weak fine subangular blocky structure; hard, very friable, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium interstitial and tubular pores; 5 percent limestone gravel; many medium masses of lime, many prominent lime crusts on gravel; violently effervescent; moderately alkaline (pH 8.3); diffuse wavy boundary.
- Bk2—28 to 50 inches, very pale brown (10YR 8/3) gravelly clay loam, light brownish gray (10YR 6/2) moist; massive; very hard, very friable, moderately sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; 25 percent limestone gravel; many fine, medium, or coarse masses of lime, 3 prominent lime crusts on gravel; violently effervescent; moderately alkaline (pH 8.3); diffuse wavy boundary.
- Bk3—50 to 66 inches, very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; massive; hard, very friable, slightly sticky and nonplastic; 30 percent limestone gravel; common distinct lime crusts on gravel; violently effervescent; moderately alkaline (pH 8.3).

Redchief Series

Taxonomic Class: Clayey-skeletal, smectitic Ustic Argicryolls

Typical Pedon

Redchief gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 10 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; 5 percent cobbles, 20 percent gravel; moderately acid (pH 5.6); clear wavy boundary.
- Bt1—10 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and moderately plastic; common very fine and fine and few medium and coarse roots; many very fine, fine, and medium interstitial

pores; many faint clay films of faces of peds; 15 percent cobbles, 35 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

Bt2—18 to 28 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine interstitial pores; many faint clay films on faces of peds; 20 percent cobbles, 35 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bt3—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; few very fine and fine interstitial pores; many faint clay films on faces of peds; 20 percent cobbles, 45 percent gravel; neutral (pH 6.6).

Redfern Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryalfs

Typical Pedon

Redfern very gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0.5 to 0 inches; partially decomposed needles, twigs, and leaves.

A—0 to 3 inches; light brownish gray (2.5Y 6/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles, 30 percent gravel; neutral (pH 6.9); clear smooth boundary.

E—3 to 7 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine interstitial and tubular pores; 20 percent cobbles, 40 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt—7 to 18 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common very fine and fine and few medium roots; common very fine and fine interstitial and tubular pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds and bridging sand grains; 20 percent cobbles, 45 percent gravel; moderately acid (pH 5.8).

R—18 to 60 inches; very dark gray (5Y 3/1), hard, fine-grained igneous bedrock.

Relyea Series

Taxonomic Class: Clayey-skeletal, mixed, superactive Eutric Glossocryalfs

Typical Pedon

Relyea gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—2 inches to 0; slightly decomposed forest litter.

E—0 to 3 inches; light reddish brown (5YR 6/3) gravelly loam, reddish brown (5YR 4/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine and fine discontinuous irregular and few very fine discontinuous tubular pores; 5 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

- Bt/E—3 to 6 inches; Bt part (80 percent) is reddish brown (5YR 4/4) very gravelly clay loam, dark reddish gray (5YR 4/2) moist; E part (20 percent) is light reddish brown (5YR 6/3) very gravelly loam, reddish brown (5YR 4/3) moist tongues; texture mixed is very gravelly clay loam; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and moderately plastic; many very fine and fine and common medium and coarse roots; many very fine and fine discontinuous irregular and many very fine discontinuous tubular pores; common faint clay films on faces of peds; 5 percent cobbles, 35 percent gravel; neutral (pH 6.6); clear smooth boundary.
- Bt—6 to 15 inches; reddish brown (5YR 4/4) very gravelly clay loam, dark reddish gray (5YR 4/2) moist; moderate fine subangular blocky structure; very hard, very firm, slightly sticky and moderately plastic; many medium and common very fine, fine, and coarse roots; many very fine and fine discontinuous irregular and many very fine discontinuous tubular pores; many distinct clay films on faces of peds; 10 percent cobbles, 30 percent gravel; neutral (pH 6.8); clear wavy boundary.
- Btk—15 to 28 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and moderately plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine discontinuous irregular pores; few faint clay films on faces of peds; 15 percent cobbles, 35 percent gravel; disseminated lime; continuous faint and distinct lime casts on undersides of coarse fragments; strongly effervescent; moderately alkaline (pH 7.9); gradual wavy boundary.
- Bk1—28 to 36 inches; pinkish gray (7.5YR 7/2) very gravelly loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine discontinuous irregular pores; 20 percent cobbles, 40 percent gravel; disseminated lime; continuous faint and distinct lime casts covering coarse fragments; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.
- Bk2—36 to 60 inches; pinkish gray (7.5YR 7/2) extremely cobbly loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine discontinuous irregular pores; 30 percent cobbles, 40 percent gravel; disseminated lime; continuous faint and distinct lime casts covering coarse fragments; violently effervescent; moderately alkaline (pH 8.0).

Rencot Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Calcustepts

Typical Pedon

Rencot channery loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; pale brown (10YR 6/3) channery loam, brown (10YR 5/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and pores; 20 percent channers; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bk1—4 to 14 inches; pale yellow (2.5Y 8/2) very channery loam, light brownish gray (2.5Y 6/2) moist; weak coarse blocky structure; hard, very friable, slightly sticky and slightly plastic; common fine roots and pores; 40 percent channers; common soft masses of calcium carbonate and lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.
- Bk2—14 to 18 inches; pale yellow (2.5Y 7/4) extremely channery loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, slightly sticky and

slightly plastic; 60 percent channers; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—18 to 60 inches; fractured hard argillite bedrock.

Rentsac Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Calcustepts

Typical Pedon

Rentsac channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; grayish brown (10YR 5/2) channery loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; many fine and medium roots; 15 percent sandstone channers; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—2 to 7 inches; light brownish gray (10YR 6/2) channery loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine pores; 30 percent sandstone channers; disseminated lime; continuous distinct lime casts coating channers; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Bk2—7 to 18 inches; light brownish gray (2.5Y 6/2) extremely channery loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine and few medium pores; 20 percent flagstones, 10 percent cobbles, 40 percent channers; disseminated lime; continuous distinct lime casts coating channers; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

R—18 to 60 inches; calcareous sandstone.

Repp Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Calcic Haplustepts

Typical Pedon

Repp very gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed and slightly decomposed forest litter.

E1—1 to 6 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; 40 percent gravel; slightly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.

E2—6 to 13 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; 45 percent gravel; slightly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.

Bw—13 to 25 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; few lime coats on gravel, mainly on undersides; 50 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk1—25 to 41 inches; very pale brown (10YR 7/3) extremely gravelly loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few

fine roots; thin lime coats on gravel, mainly on undersides; 70 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk2—41 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; lime coats on gravel, mainly on undersides; 65 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2).

Rochester Series

Taxonomic Class: Sandy-skeletal, mixed, frigid Typic Ustorthents

Typical Pedon

Rochester very stony loamy sand (Colors are for dry soil unless otherwise noted.)

O—2 inches to 0; undecomposed and slightly decomposed forest litter.

A—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly loamy sand, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine, medium, and coarse roots; many fine pores; 10 percent stones, 15 percent cobbles, 30 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

C1—3 to 14 inches; pale brown (10YR 6/3) extremely stony loamy sand, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium and few coarse roots; many fine pores; 15 percent stones, 15 percent cobbles, 30 percent gravel; neutral (pH 6.9); clear smooth boundary.

C2—14 to 60 inches; light brownish gray (2.5Y 6/2) extremely stony loamy sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; few fine, medium, and coarse roots; 15 percent stones, 15 percent cobbles, 30 percent gravel; neutral (pH 7.1).

Roegulch Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Typical Pedon

Roegulch cobbly sandy clay loam, very bouldery (Colors are for dry soil unless otherwise noted.)

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

A—0 to 4 inches; dark grayish brown (10YR 4/2) cobbly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 20 percent cobbles, 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw—4 to 16 inches; pale brown (10YR 6/3) very cobbly sandy clay loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; many very fine and few fine tubular and interstitial pores; 10 percent stones, 20 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Cr—16 to 19 inches; light brownish gray (2.5Y 6/2) decomposed granite bedrock (grus) that crushes to very gravelly coarse sand; gradual wavy boundary.

R—19 to 60 inches; hard granite bedrock.

Roman Series

Taxonomic Class: Sandy-skeletal, mixed Andic Dystricrypts

Typical Pedon

Roman medial loam, extremely bouldery (Colors are for dry soil unless otherwise noted. When described on June 27, 1994, the soil was moist throughout.)

Oi—0 to 0.5 inch; moss, needles, leaves, twigs, mixed with wood ash, Mt. St. Helen's volcanic ash, and charcoal.

Oe—0.5 to 1 inch; decomposed organic matter mixed with Mt. St. Helen's volcanic ash.

A—1 to 3 inches; grayish brown (10YR 5/2) medial loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure parting to weak very fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 5 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

Bw1—3 to 6 inches; yellowish brown (10YR 5/4) cobbly medial loam, dark yellowish brown (10YR 3/4) moist; weak very fine and fine subangular blocky structure parting to weak very fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 10 percent cobbles, 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

Bw2—6 to 12 inches; light yellowish brown (10YR 6/4) cobbly medial loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 5 percent stones, 15 percent cobbles, 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

2Bw3—12 to 25 inches; yellow (2.5Y 7/6) very cobbly sandy loam, light olive brown (2.5Y 5/6) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine and medium roots; many very fine and few fine irregular pores; few fine faint iron stains that are dark yellowish brown (10YR 4/6) moist; few fine mica flakes; 15 percent stones, 30 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.

2BC—25 to 31 inches; pale yellow (2.5Y 7/4) very flaggy loamy sand, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine irregular pores; many very fine mica flakes; 5 percent stones, 10 percent cobbles, 25 percent flagstones, 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C1—31 to 44 inches; mixed light gray (2.5Y 7/2) and pale yellow (2.5Y 7/3) very gravelly loamy sand, mixed grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; many very fine mica flakes; 5 percent stones, 10 percent cobbles, 25 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2C2—44 to 60 inches; mixed light gray (2.5Y 7/2) and yellow (2.5Y 7/6) extremely cobbly sand, mixed grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; few fine faint iron stains that are yellowish brown (10YR 5/6) moist; many very fine mica flakes; 30 percent cobbles, 30 percent gravel; moderately acid (pH 6.0).

Rothiemay Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Aridic Calcicustolls

Typical Pedon

Rothiemay loam (Colors are for dry soil unless otherwise noted.)

- Ap—0 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.
- Bw—7 to 17 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to weak medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common fine roots; many very fine and fine pores; 5 percent gravel; continuous faint lime coats on surfaces of gravel; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.
- Bk1—17 to 23 inches; light brownish gray (10YR 6/2) loam, brown (10YR 5/3) moist; weak medium and coarse prismatic structure parting to weak fine and medium subangular blocky; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine pores; 5 percent gravel; continuous faint lime coats on surfaces of gravel; many fine and medium masses and threads of lime; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.
- Bk2—23 to 31 inches; white (10YR 8/2) clay loam, very pale brown (10YR 7/3) moist; weak coarse prismatic structure; hard, friable, moderately sticky and slightly plastic; common very fine and fine roots; common very fine and fine pores; 5 percent gravel; continuous distinct lime coats on surfaces of gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.2); diffuse wavy boundary.
- Bk3—31 to 66 inches; white (10YR 8/2) clay loam, very pale brown (10YR 7/3) moist; massive; hard, friable, moderately sticky and slightly plastic; few very fine and fine roots; common very fine and fine pores; pale brown (10YR 6/3) sandy loam pockets and discontinuous layers, brown (10YR 4/3) moist; 10 percent gravel; continuous distinct lime coats on surfaces of gravel; continuous distinct lime casts on undersides of gravel; disseminated lime; violently effervescent; strongly alkaline (pH 8.6).

Roundor Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Typic Calcicustolls

Typical Pedon

Roundor loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and few medium roots; many fine vesicular pores; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.
- Bw—5 to 12 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, moderately sticky and slightly plastic; common fine roots; common very fine and fine pores; 5 percent gravel with common distinct lime coats on undersides; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk1—12 to 26 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; weak coarse prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; common very

fine pores; 5 percent gravel; common fine and medium masses of lime; violently effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

2Bk2—26 to 31 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; stratified parting to weak medium granular structure; hard, friable, slightly sticky and slightly plastic; few fine roots; 10 percent soft shale fragments; common fine masses of lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Cr—31 to 60 inches; very pale brown (10YR 7/3) semiconsolidated shale; pale brown (10YR 6/3) moist; strongly effervescent; strongly alkaline (pH 8.8).

Roy Series

Taxonomic Class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Roy stony loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; dark grayish brown (10YR 4/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine pores; 10 percent stones, 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—6 to 14 inches; dark grayish brown (10YR 4/2) very stony clay loam, brown (10YR 4/3) moist; strong very fine angular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine roots; many very fine pores; continuous distinct very dark grayish brown (10YR 3/2) moist clay films on faces of peds; 20 percent stones, 15 percent cobbles, 10 percent gravel; neutral (pH 7.0); diffuse wavy boundary.

Bt2—14 to 32 inches; brown (7.5YR 5/4) very stony clay loam, brown (7.5YR 4/4) moist; strong very fine angular blocky structure; hard, firm, moderately sticky and moderately plastic; many very fine roots; many very fine pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; 25 percent stones, 15 percent cobbles, 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bk—32 to 60 inches; light yellowish brown (10YR 6/4) very stony sandy clay loam, yellowish brown (10YR 5/4) moist; fine subangular blocky structure; hard, friable, moderately sticky and slightly plastic; 25 percent stones, 15 percent cobbles, 10 percent gravel; disseminated lime; slightly effervescent; slightly alkaline (pH 7.8).

Rubick Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Rubick cobbly coarse sandy loam, very stony (Colors are for dry soil unless otherwise noted.)

Oi—2 to 0 inches; forest litter of partially decomposed needles, twigs, and moss roots.

E1—0 to 3 inches; light brownish gray (10YR 6/2) cobbly coarse sandy loam, brown (10YR 4/3) moist; moderate very fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine, fine, and medium pores; 5 percent stones, 10 percent cobbles, 10 percent gravel; slightly acid (pH 6.4); abrupt wavy boundary.

E2—3 to 8 inches; light brownish gray (10YR 6/2) very cobbly coarse sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium and common

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- coarse roots; many very fine, fine, and medium pores; 5 percent stones, 20 percent cobbles, 15 percent gravel; neutral (pH 7.0); clear wavy boundary.
- Bw—8 to 27 inches; pale brown (10YR 6/3) very stony coarse sandy loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium and common coarse roots; many very fine, fine, and medium pores; 20 percent stones, 10 percent cobbles, 20 percent gravel; neutral (pH 7.2); gradual wavy boundary
- BC—27 to 60 inches; light gray (10YR 7/2) extremely stony loamy coarse sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; few fine, medium, and coarse roots; many very fine, fine, and medium pores; 30 percent stones, 15 percent cobbles, 25 percent gravel; neutral (pH 7.0).

Rubycreek Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Dystrocryepts

Typical Pedon

Rubycreek very bouldery medial silt loam (Colors are for dry soil unless otherwise noted. When described on September 9, 1993, the soil was slightly moist throughout.)

- Oi—0 to 0.5 inch; leaves, twigs, grass, moss, and bark.
- A—0.5 to 2 inches; grayish brown (10YR 5/2) medial silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 5 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.
- Bw1—2 to 7 inches; yellowish brown (10YR 5/6) medial silt loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.
- Bw2—7 to 11 inches; light yellowish brown (10YR 6/4) medial silt loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; many very fine tubular pores; 5 percent cobbles, 5 percent gravel; slightly acid (pH 6.5); clear wavy boundary.
- 2Bw3—11 to 19 inches; light yellowish brown (10YR 6/4) very stony loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 20 percent stones, 10 percent cobbles, 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.
- 2Bt—19 to 28 inches; pale yellow (2.5Y 7/4) very cobbly loam, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; very few faint clay films on faces of peds; common faint and few distinct silica coats on faces of peds that are light brownish gray (10YR 6/2) moist; 30 percent cobbles, 10 percent gravel; slightly acid (pH 6.3); clear wavy boundary.
- 2C—28 to 60 inches; mixed pale yellow (2.5Y 7/4) and pale yellow (2.5Y 7/3) very cobbly sandy loam, light olive brown (2.5Y 5/4) and light olive brown (2.5Y 5/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; common very fine tubular and irregular pores; few faint clay films on gravel that are dark yellowish brown (10YR 4/6) moist; small part of horizon is discontinuous weakly

cemented by silica that is gray (10YR 6/1) moist; 30 percent cobbles, 25 percent gravel; slightly acid (pH 6.1).

Rumsey Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Calcicrypts

Typical Pedon

Rumsey gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

Oi—0 inches to 2 inches; slightly decomposed forest litter.

Oe—2 inches to 3; decomposed forest litter.

Bw1—3 to 11 inches; light brown (7.5YR 6/4) gravelly ashy silt loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 20 percent gravel; high amount of volcanic ash; moderately acid (pH 5.6); clear wavy boundary.

2Bw2—11 to 19 inches, light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; 10 percent cobbles, 45 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

2Bk1—19 to 32 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and common medium roots; 10 percent cobbles, 55 percent gravel; few faint lime casts on all sides of coarse fragments; strongly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

2Bk2—32 to 41 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and few medium roots; 20 percent cobbles, 50 percent gravel; common distinct lime casts on all sides of coarse fragments; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

2Bk3—41 to 63 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine and few medium roots; 20 percent cobbles, 55 percent gravel; many prominent lime casts on all sides of coarse fragments; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8).

Sarbo Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Pachic Haplustolls

Typical Pedon

Sarbo loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 12 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; common very fine and fine pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bw1—12 to 23 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and common fine and medium tubular pores; few worm casts; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

- Bw2—23 to 33 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and common fine and medium roots; common very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.0); gradual smooth boundary.
- 2C—33 to 60 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; 15 percent cobbles, 35 percent gravel; neutral (pH 7.0).

Savenac Series

Taxonomic Class: Fine, mixed, superactive Vitrandic Glossocryalfs

Typical Pedon

Savenac silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 0.5 inches; matted, partially decomposed organic material.
- A1—0.5 to 5 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable; many fine roots; many fine pores; discontinuous trace of light gray silt loam just beneath O horizon; neutral; clear smooth boundary.
- A2—5 to 8 inches; very pale brown (10YR 7/4) and 15 percent light gray (10YR 7/2) silt loam, brown (7.5YR 4/4) and brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common medium roots; many fine and medium pores; neutral; abrupt smooth boundary.
- 2E—8 to 17 inches; very pale brown (10YR 8/2) and 10 percent pale brown (10YR 6/3) silt loam, light brownish gray (10YR 6/2) and brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few medium roots; few fine and medium pores; moderately acid; clear smooth boundary.
- 2E/B—17 to 28 inches; white (10YR 8/1) and 40 percent yellowish brown (10YR 5/4) silty clay loam, light brownish gray (10YR 6/2) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few medium roots; few medium pores; distinct patchy clay films on faces of peds and walls of cavities; organic staining on surfaces of peds; very strongly acid; abrupt smooth boundary.
- 2B/E—28 to 49 inches; pale brown (10YR 6/3), strong brown (7.5YR 5/6) and 20 percent very pale brown (10YR 8/2) very gravelly silty clay loam, yellowish brown (10YR 5/4), brown (7.5YR 5/4) and pale brown (10YR 6/3) moist; small mottles of brownish yellow (10YR 6/8); massive; hard, very firm, moderately sticky and moderately plastic; few tubular pores; distinct clay film on walls of cavities and patchy clay films on gravel; 35 percent gravel; slightly acid; gradual smooth boundary.
- 2Bt—49 to 63 inches; brown (7.5YR 5/4), pale brown (10YR 6/3), and mottles of reddish yellow (7.5YR 6/8) gravelly silty clay, brown (7.5YR 5/4), yellowish brown (10YR 5/4), and strong brown (7.5YR 5/8) moist; strong fine subangular blocky structure; very hard, very firm, very sticky and very plastic; few medium tubular pores; distinct clay films on walls of cavities; 30 percent gravel; slightly alkaline; gradual smooth boundary.

Sawbuck Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Sawbuck loam (Colors are for dry soil unless otherwise noted.)

- O_i—1 inch to 0; forest litter of partially decomposed twigs and needles.
- A₁—0 to 6 inches; gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; 5 percent angular gravel; slightly acid (pH 6.2); gradual smooth boundary.
- A₂—6 to 9 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many faint gray silt and sand skeletons on faces of peds; 5 percent angular gravel; moderately acid (pH 5.6); gradual smooth boundary.
- Bt₁—9 to 15 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; many very fine tubular and interstitial pores; common distinct dark brown (10YR 3/3) moist clay films on faces of peds; many faint gray silt and sand skeletons on faces of peds; 25 percent angular gravel; moderately acid (pH 5.6); clear smooth boundary.
- Bt₂—15 to 40 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine tubular and interstitial pores; many distinct dark brown (10YR 3/3) moist clay films on faces of peds and lining pores; 5 percent angular cobbles, 45 percent angular gravel; moderately acid (pH 5.6); gradual smooth boundary.
- Bt₃—40 to 48 inches; light gray (2.5Y 7/2) very gravelly silty clay loam, grayish brown (2.5Y 5/2) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and slightly plastic; common very fine and fine and few medium roots; many very fine tubular and interstitial pores; many distinct clay films on faces of peds; many faint silt and sand skeletons on faces of peds; common distinct pale yellow (2.5Y 7/4) stains on faces of peds and on coarse fragments; 40 percent angular gravel; moderately acid (pH 6.0); gradual smooth boundary.
- Bt₄—48 to 60 inches; light brownish gray (2.5Y 6/2) gravelly silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and slightly plastic; few very fine roots; many very fine tubular and interstitial pores; common distinct clay films on faces of peds; common distinct pale yellow (2.5Y 7/4) stains on peds and coarse fragments; 15 percent gravel-size angular sandstone and shale fragments; moderately acid (pH 5.9).

Sawicki Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Sawicki cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

- A—0 to 8 inches; dark brown (10YR 3/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent cobbles, 15 percent gravel; slightly acid (pH 6.4); clear wavy boundary.

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- Bt1—8 to 14 inches; dark grayish brown (10YR 4/2) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; common distinct brown (10YR 4/3) clay films on faces of peds; many very fine and fine roots; many very fine and fine tubular pores; 25 percent cobbles, 15 percent gravel; neutral (pH 6.6); gradual wavy boundary.
- Bt2—14 to 25 inches; brown (10YR 5/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common faint brown (10YR 4/3) clay films on faces of peds; many very fine and fine and common medium roots; many very fine and fine tubular pores; 30 percent cobbles, 25 percent gravel; neutral (pH 6.6); gradual irregular boundary.
- BC—25 to 51 inches; light brownish gray (10YR 6/2) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine tubular pores; 40 percent cobbles, 20 percent gravel; neutral (pH 7.2); gradual irregular boundary.
- C—51 to 63 inches; light brownish gray (10YR 6/2) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine and fine tubular pores; 55 percent cobbles, 25 percent gravel; neutral (pH 7.2).

Saypo Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Aquic Calciustolls

Typical Pedon

Saypo clay loam (Colors are for moist soil unless otherwise noted.)

- A—0 to 7 inches; very dark brown (10YR 2/2) clay loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium granular structure; slightly hard, very friable, moderately sticky and slightly plastic; many fine and medium roots; many fine and medium pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.
- Bk1—7 to 15 inches; light brownish gray (2.5Y 6/2) clay loam, light gray (2.5Y 7/2) dry; weak medium prismatic structure parting to moderate fine and medium granular; hard, very friable, moderately sticky and moderately plastic; common fine and few medium roots; common fine pores; few fine masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.
- Bk2—15 to 25 inches; brown (10YR 5/3) clay loam, very pale brown (10YR 7/3) dry, common fine distinct yellowish brown (10YR 5/6) redox concentrations; weak medium prismatic structure parting to moderate medium granular; very hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine pores; common fine masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Bk3—25 to 48 inches; brown (10YR 4/3) clay loam, pale brown (10YR 6/3) dry, many medium distinct yellowish brown (10YR 5/6) redox concentrations and few fine gray (10YR 5/1) redox depletions; massive; very hard, friable, moderately sticky and moderately plastic; few very fine roots; common very fine pores; 10 percent gravel; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- C—48 to 60 inches; brown (10YR 4/3) gravelly clay loam, pale brown (10YR 6/3) dry, many medium distinct yellowish brown (10YR 5/6) redox concentrations and common fine gray (10YR 5/1) redox depletions; massive; very hard, friable,

moderately sticky and moderately plastic; 25 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.2).

Sebud Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Sebud loam, extremely stony (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak granular structure parting to fine crumb structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; 10 percent gravel, 3 percent stone surface cover and occasional boulder; neutral (pH 7.2); clear smooth boundary.

A2—4 to 10 inches; dark grayish brown (10YR 4/2) very stony clay loam, very dark grayish brown (10YR 3/2) moist; very dark brown (10YR 2/2) moist coats; moderate fine and medium blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine roots and pores; 1 percent boulders, 40 percent stones, 10 percent gravel; slightly alkaline (pH 7.5); clear wavy boundary.

Bw1—10 to 22 inches; yellowish brown (10YR 5/4) very stony clay loam, dark brown (10YR 3/3) moist; dark yellowish brown (10YR 3/4) moist coats; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots and pores; 1 percent boulders, 40 percent stones, 10 percent cobbles and gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bw2—22 to 28 inches; light yellowish brown (10YR 6/4) very stony coarse sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly moderately sticky and slightly plastic; few very fine roots and pores; 1 percent boulders, 40 percent stones, 5 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

Bw3—28 to 49 inches; very pale brown (10YR 7/3) very stony coarse sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; few very fine roots; 1 percent boulders, 40 percent stones, 5 percent weathered granitic gravel, many clear quartz sand grains; slightly alkaline (pH 7.8); gradual wavy boundary.

Bw4—49 to 62 inches; very pale brown (10YR 7/3) very stony clay loam, yellowish brown (10YR 5/4) moist; moderate coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine tubular pores; 1 percent boulders, 40 percent stones, 5 percent gravel; slightly alkaline (pH 7.8).

Shaboom Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Typical Pedon

Shaboom gravelly coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—1 to 0 inches; forest litter of partially decomposed needles, twigs, and leaves.

A—0 to 3 inches; brown (10YR 5/3) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and fine pores; 5 percent cobbles, 20 percent gravel; neutral (pH 7.1); clear wavy boundary.

Bw—3 to 12 inches; very pale brown (10YR 7/4) very gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; soft, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular pores; 15 percent cobbles, 35 percent gravel; neutral (pH 6.8).

R—12 to 60 inches; hard granite bedrock.

Shadow Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryepts

Typical Pedon

Shadow extremely channery sandy loam (Colors are for dry soil unless otherwise noted.)

Oe—0 to 1 inch; mostly decomposed forest litter.

A—1 to 4 inches; brown (10YR 5/3) extremely channery sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 15 percent flagstones, 45 percent channers; slightly acid (pH 6.2); clear wavy boundary.

E—4 to 18 inches; pale brown (10YR 6/3) very channery sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; common fine pores; 50 percent channers; slightly acid (pH 6.4); clear wavy boundary.

Bw—18 to 31 inches; brown (10YR 5/3) extremely channery sandy loam, brown (10YR 4/3) moist; weak fine blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common fine pores; 65 percent channers; neutral (pH 6.7); gradual smooth boundary.

BC—31 to 60 inches; pale brown (10YR 6/3) extremely channery sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 70 percent channers; neutral (pH 6.8).

Shanley Series

Taxonomic Class: Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Shanley gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic, many very fine roots; many very fine and fine tubular pores; 5 percent cobbles, 20 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt1—6 to 15 inches; reddish brown (5YR 5/3) very gravelly clay loam, dark reddish brown (5YR 3/3) moist; moderate fine subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; common very fine tubular pores; common faint clay films on faces of peds; 10 percent cobbles, 30 percent gravel; slightly alkaline (pH 7.8); gradual wavy boundary.

Bt2—15 to 28 inches; reddish brown (5YR 5/4) very gravelly clay loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; extremely hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; few very fine tubular pores; common faint clay films on faces of peds; 10 percent cobbles, 35 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.

Bt3—28 to 60 inches; reddish brown (5YR 5/4) very gravelly clay loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; extremely hard, firm, moderately sticky and moderately plastic; common very fine roots; few very fine tubular pores; few faint clay films on faces of peds; 10 percent cobbles, 35 percent gravel; slightly alkaline (pH 7.4).

Sharrott Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts

Typical Pedon

Sharrott gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

A—2 to 6 inches; brown (10YR 5/3) gravelly loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; 20 percent gravel; slightly acid (pH 6.5); clear smooth boundary.

Bw—6 to 15 inches; light yellowish brown (10YR 6/4) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; 40 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary.

BC—15 to 17 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few medium and coarse roots; 70 percent gravel; moderately acid (pH 6.0); abrupt irregular boundary.

R—17 to 60 inches; fractured argillite bedrock.

Shawmut Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Shawmut gravelly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure, weak thin platy in upper inch; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; 5 percent cobbles, 15 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—3 to 9 inches; dark grayish brown (10YR 4/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to strong fine angular and subangular blocky; hard, very friable, moderately sticky and moderately plastic; many fine roots; common fine pores; common faint clay films on faces of peds and on gravel; 5 percent cobbles, 25 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—9 to 12 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong fine blocky structure; hard, very friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine pores; many distinct clay films on faces of peds and on gravel; 5 percent cobbles, 35 percent gravel; slightly alkaline (pH 7.8); clear wavy boundary.

Btk—12 to 15 inches; grayish brown (10YR 5/2) very gravelly clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium blocky structure; hard, very friable, moderately sticky and moderately plastic; many fine roots; common fine pores; common faint clay films on faces of peds; 5 percent cobbles, 50 percent gravel; common distinct lime coats on undersides of coarse fragments; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk1—15 to 24 inches; grayish brown (2.5Y 5/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; 5 percent cobbles, 50 percent gravel; many distinct lime coats on undersides of coarse fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk2—24 to 60 inches; grayish brown (2.5Y 5/2) extremely gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 10 percent cobbles, 55 percent gravel; many distinct lime coats on undersides of gravel; strongly effervescent; moderately alkaline (pH 8.4).

Shewag Series

Taxonomic Class: Sandy-skeletal, mixed Oxyaquic Haplocryolls

Typical Pedon

Shewag very gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 3 inches; undecomposed and partially decomposed matted roots; abrupt smooth boundary.

A—3 to 9 inches; dark gray (10YR 4/1) very gravelly loam, black (10YR 2/1) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine dendritic tubular pores; 5 percent cobbles, 35 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bw—9 to 18 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; few fine faint yellowish brown (10YR 5/6) moist redox concentrations (due to prolonged saturation from flood irrigation); moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and common fine dendritic tubular pores; 15 percent cobbles, 50 percent gravel; neutral (pH 7.0); clear wavy boundary.

2C—18 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; 20 percent cobbles, 50 percent gravel; neutral (pH 7.0).

Sieben Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Calcic Argiustolls

Typical Pedon

Sieben gravelly loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure parting to moderate very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; 20 percent angular gravel; slightly acid (pH 6.2); clear smooth boundary.

A2—5 to 9 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and interstitial pores; 20 percent angular gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt1—9 to 17 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, moderately sticky and moderately plastic;

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common very fine roots; many very fine tubular and interstitial pores; many distinct brown (10YR 5/3) clay films on faces of peds; 45 percent angular gravel; slightly acid (pH 6.4); gradual smooth boundary.

Bt2—17 to 21 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, moderately sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; few faint clay films on faces of peds and on coarse fragments; 5 percent angular cobbles, 55 percent angular gravel; few faint lime casts on undersides of coarse fragments; slightly alkaline (pH 7.8); gradual smooth boundary.

Bk1—21 to 30 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular and interstitial pores; 10 percent angular cobbles, 45 percent angular gravel; continuous distinct lime casts on undersides of rock fragments; many fine seams and masses of lime; violently effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk2—30 to 41 inches; very pale brown (10YR 7/3) extremely gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; 20 percent angular cobbles, 55 percent angular gravel; prominent continuous lime on fragments; lime-cemented sand; fine gravel on undersides of some rock fragments; violently effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk3—41 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 15 percent angular cobbles, 60 percent angular gravel; continuous faint lime casts on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.0).

Sig Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Dystrocryepts

Typical Pedon

Sig gravelly loam (Colors are for dry soil unless otherwise noted.) When described on October 1, 1987 the soil was moist from the surface to bedrock.

Oi—0 to 2 inches; organic layer of needles, leaves, and roots.

A—2 to 9 inches; light reddish brown (5YR 6/3) gravelly loam, reddish brown (5YR 4/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; 1 percent stones, 5 percent cobbles, 25 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.

Bw—9 to 16 inches; reddish brown (5YR 5/4) very gravelly loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; 2 percent stones, 15 percent cobbles, 30 percent gravel; moderately acid (pH 5.6); abrupt wavy boundary.

R—16 to 60 inches; hard granite bedrock, fractured in upper few inches.

Sigbird Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryepts

Typical Pedon

Sigbird very channery loam (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; brown (10YR 5/3) extremely channery loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent flagstones, 50 percent channers; neutral (pH 7.2); clear wavy boundary.

Bw—5 to 14 inches; pale brown (10YR 6/3) extremely channery loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 15 percent flagstones, 60 percent channers; slightly alkaline (pH 7.4); clear smooth boundary.

R—14 to 60 inches; gray (10YR 5/1) fractured hard shale.

Silas Series

Taxonomic Class: Fine-loamy, mixed, superactive Cumulic Haplocryolls

Typical Pedon

Silas loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak very fine crumb structure; soft, very friable, slightly sticky and nonplastic; many very fine medium and coarse roots; few cobbles and gravel; neutral (pH 6.8); abrupt smooth boundary.

A2—3 to 22 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist with thin lenses of black (10YR 2/1) and very dark gray (10YR 3/1); massive; soft, very friable, slightly sticky and nonplastic; many very fine and medium coarse roots; few cobbles and gravel; neutral (pH 6.9); abrupt wavy boundary.

C—22 to 60 inches; brown (10YR 5/3) loam stratified with thin lenses of very fine sandy loam, silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 5 percent cobbles, 10 percent gravel; neutral (pH 7.0).

Silverchief Series

Taxonomic Class: Fine, mixed, superactive, frigid Calcic Haplustalfs

Typical Pedon

Silverchief loam (Colors are for dry soil unless otherwise noted.)

Oi—3 to 2 inches; organic mat of needles, leaves, and twigs.

Oe—2 inches to 0; humus layer.

E—0 to 5 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very fine and fine pores; many unstained silt and sand grains on surface of peds; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt1—5 to 20 inches; light olive brown (2.5YR 5/4) silty clay, olive brown (2.5YR 4/4) moist; moderate medium prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, moderately sticky and moderately plastic; many fine and medium roots; many fine pores; 5 percent cobbles, 10 percent gravel; common distinct clay films on faces of peds; olive brown (2.5YR 4/4) strains on faces of peds; neutral (pH 6.7); clear wavy boundary.

Bt2—20 to 27 inches; light olive brown (2.5YR 5/4) gravelly silty clay, olive brown (2.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common fine and medium roots; many fine pores; 10 percent cobbles, 20 percent gravel; continuous faint clay films on faces of peds; continuous thin coats of lime on undersides of smaller gravel, continuous faint crusts of lime on undersides of larger cobbles; slightly alkaline (pH 7.4); gradual clear wavy boundary.

Bk—27 to 60 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots in upper part grading to few very fine and medium roots in lower part; common fine pores; 15 percent cobbles, 35 percent gravel; disseminated lime, continuous distinct lime coats on surfaces of rock fragments; strongly effervescent; moderately alkaline (pH 8.4).

Skaggs Series

Taxonomic Class: Loamy-skeletal, carbonatic Calcic Haplocryolls

Typical Pedon

Skaggs loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 4 inches, very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; strong very fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; few limestone fragments; neutral; clear wavy boundary.

A2—4 to 10 inches, very dark gray (10YR 3/1) heavy loam, black (10YR 2/1) moist; weak medium blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 10 percent limestone fragments; slightly effervescent; slightly alkaline; clear wavy boundary.

Bk1—10 to 21 inches, light brownish gray (10YR 6/2) gravelly clay loam, dark grayish brown (10YR 4/2) moist; strong very fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine pores; 10 percent limestone cobbles, 30 percent limestone gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

Bk2—21 to 32 inches, light gray (2.5Y 7/2) very stony clay loam, grayish brown (2.5Y 5/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine pores; 20 percent stones, 25 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

R—32 to 60 inches, light gray (2.5Y 7/2) interbedded limestone and shale, light olive brown (2.5Y 5/4) moist; strongly effervescent; moderately alkaline.

Staad Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Haplustolls

Typical Pedon

Staad silty clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and moderately

plastic; many very fine and fine and common medium roots; many discontinuous and few very fine tubular pores; 5 percent cobbles; slightly alkaline; gradual wavy boundary.

A2—6 to 16 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and moderately plastic; common very fine, fine, and medium roots; many discontinuous and few very fine tubular pores; 5 percent cobbles; slightly alkaline; clear wavy boundary.

Bw1—16 to 23 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many discontinuous and common very fine and fine pores; 5 percent cobbles; slightly effervescent; moderately alkaline; gradual wavy boundary.

Bw2—23 to 60 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine, fine, and medium discontinuous pores; 5 percent cobbles; slightly effervescent; moderately alkaline.

Starley Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Lithic Haplocryolls

Typical Pedon

Starley very cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 9 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; strong fine granular structure; soft, very friable, moderately sticky and slightly plastic; 40 percent angular limestone fragments 3 to 10 inches in diameter; neutral (pH 6.8); gradual wavy boundary.

Bk—9 to 15 inches; pale brown (10YR 6/3) extremely cobbly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, moderately sticky and slightly plastic; strongly effervescent, calcium carbonate disseminated and as inconsistent common soft masses and as thin pendants on some rock fragments; 65 percent angular limestone fragments mainly 3 to 10 inches in diameter; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—15 to 60 inches; hard limestone.

Stecum Series

Taxonomic Class: Sandy-skeletal, mixed Typic Cryorthents

Typical Pedon

Stecum coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; light brownish gray (10YR 6/2) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak coarse granular; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine pores; 10 percent gravel; neutral (pH 7.3); clear smooth boundary.

A2—5 to 12 inches; pale brown (10YR 6/3) gravelly loamy coarse sand, brown (10YR 4/3) moist; weak fine subangular blocky structure parting to weak coarse granular; slightly hard, very friable, nonsticky and nonplastic; few fine roots; few fine pores; 5 percent cobbles, 10 percent gravel; neutral (pH 7.3); clear wavy boundary.

C—12 to 28 inches; light gray (2.5Y 7/2) gravelly coarse sand, pale brown (10YR 6/3) moist; massive; loose, very friable, nonsticky and nonplastic; few fine roots; 5 percent stones, 5 percent cobbles, 35 percent gravel; neutral (pH 7.3); abrupt smooth boundary.

Cr—28 inches; fractured and partly weathered micaceous granite and gneiss.

Straw Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Cumulic Haplustolls

Typical Pedon

Straw loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and few medium roots; many fine and medium pores; disseminated lime; slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

A2—10 to 27 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.0); diffuse wavy boundary.

Bk—27 to 38 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine pores; disseminated lime; few fine masses of lime; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

C1—38 to 54 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine pores; disseminated lime; strongly effervescent; moderately alkaline (pH 8.3); clear smooth boundary.

2C2—54 to 66 inches; light brownish gray (10YR 6/2) loamy sand, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; strongly effervescent; slightly alkaline (pH 7.6).

Surdal Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Surdal cobbly loam, stony (Colors are for dry soil unless otherwise noted.)

A1—0 to 7 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent cobbles, 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—7 to 13 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent cobbles, 25 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bw1—13 to 23 inches; grayish brown (10YR 5/2) very gravelly loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium

- subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent cobbles, 30 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.
- Bw2—23 to 31 inches; brown (10YR 5/3) extremely cobbly loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 30 percent cobbles, 30 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
- R—31 to 60 inches; hard, slightly fractured, fine-grained igneous bedrock.

Tepecreek Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryalfs

Typical Pedon

Tepecreek very gravelly sandy clay loam, very bouldery (Colors are for dry soil unless otherwise noted.)

- Oi—1 to 0 inches; partially decomposed needles, twigs, and leaves.
- A—0 to 2 inches; grayish brown (10YR 5/2) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 35 percent gravel; slightly acid (pH 6.3); clear smooth boundary.
- E—2 to 8 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and few medium pores; 40 percent gravel; slightly acid (pH 6.2); clear smooth boundary.
- Bt—8 to 18 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine interstitial and tubular pores; many faint clay films bridging sand grains; 40 percent gravel; slightly acid (pH 6.1); clear wavy boundary.
- BC—18 to 35 inches; olive brown (2.5Y 4/4) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine roots; many very fine and few fine interstitial and tubular pores; 55 percent gravel; neutral (pH 6.6); clear wavy boundary.
- Cr—34 to 52 inches; light olive brown (2.5Y 5/4) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; slightly acid (pH 6.4); gradual wavy boundary.
- R—52 to 60 inches; hard granite bedrock.

Tepete Series

Taxonomic Class: Loamy, mixed, euic Terric Cryohemists

Typical Pedon

Tepete mucky peat (Colors are for moist soil unless otherwise noted.)

- Oe1—0 to 7 inches; very dark brown (10YR 2/2), mucky peat; about 40 percent fiber and 35 percent rubbed; massive; fibers are primarily brown (10YR 4/3) and

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- very dark brown (10YR 2/2) dry sedges and rushes; many very fine and fine and common medium roots; moderately acid (pH 5.6); clear smooth boundary.
- Oe2—7 to 14 inches; black (10YR 2/1) mucky peat; about 40 percent fiber and 35 percent rubbed; massive; fibers are primarily sedges and rushes; many very fine and common fine and medium roots; moderately acid (pH 5.6); clear smooth boundary.
- Oe3—14 to 25 inches; black (10YR 2/1) mucky peat, black (10YR 2/1) dry; about 75 percent fiber and 60 percent rubbed; fibrous or massive; extremely hard and wets very slowly; very friable; few very fine and fine roots; fibers are primarily sedges and rushes; neutral (pH 6.8); clear smooth boundary.
- Oe4—25 to 29 inches; black (10YR 2/1) mucky peat, black (10YR 2/1) dry; few thin layers of very dark gray (N 3/) silty clay loam, dark gray (N 4/) dry; about 75 percent fiber, 60 percent rubbed; massive; extremely hard, very friable, slightly sticky and slightly plastic; fibers are primarily sedges and rushes; neutral (pH 6.8); clear smooth boundary.
- A—29 to 34 inches; black (N 2/) silty clay loam, dark gray (2.5Y 4/1) dry; massive; extremely hard, firm, moderately sticky and moderately plastic; common very fine tubular pores; contains common partially decomposed plant remains; neutral (pH 6.8); clear smooth boundary.
- Cg1—34 to 43 inches; dark gray (5Y 4/1) silty clay loam, gray (5Y 6/1) dry; massive; very hard, friable, moderately sticky and moderately plastic; few very fine tubular pores; common fine prominent black (10YR 2/1) and few fine distinct very dark grayish brown (10YR 3/2) irregularly shaped iron masses around roots and on surfaces along pores; the lower 3 to 8 inches of this horizon contains pockets of very fine sand silt having common coarse prominent yellowish brown (10YR 5/6) irregularly shaped iron masses, brownish yellow (10YR 6/6) dry; contains common partially decomposed plant remains; slightly alkaline (pH 7.6); clear wavy boundary.
- 2Cg2—43 to 58 inches; grayish brown (2.5Y 5/2) gravelly loamy sand, light brownish gray (2.5Y 6/2) dry; single grain; loose, nonsticky and nonplastic; 30 percent gravel, dominantly granite and some sandstone, quartzite, limestone; moderately alkaline (pH 8.0).
- 2Cg3—58 to 60 inches; very gravelly sand; single grain; loose, nonsticky and nonplastic; 50 percent gravel; moderately alkaline (pH 8.0).

Tetonview Series

Taxonomic Class: Fine-loamy, mixed, superactive, frigid Aeric Calciaquolls

Typical Pedon

Tetonview loam, 0 to 2 percent slopes (Colors are for moist soil unless otherwise noted.)

- Oi—0 to 2 inches; partially decomposed fibers and roots of sedges and rushes.
- A1—2 to 9 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak fine granular structure; slightly hard, very friable, moderately sticky and slightly plastic; many fine and medium roots; common fine irregular tubular pores; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- Bkg1—14 to 28 inches; grayish brown (10YR 5/2) clay loam, light gray (10YR 7/2) dry, few fine distinct yellowish brown (10YR 5/4) redox concentrations; moderate medium granular structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; common medium masses of lime; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkg2—28 to 38 inches; grayish brown (10YR 5/2) clay loam, light gray (10YR 7/2) dry, common fine distinct yellowish brown (10YR 5/4) redox concentrations; massive; hard, firm, moderately sticky and moderately plastic; few very fine roots; few medium masses of lime; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bkg3—38 to 60 inches; grayish brown (10YR 5/2) gravelly clay loam, light gray (10YR 7/2) dry, common medium prominent yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) redox concentrations; massive; very hard, firm, moderately sticky and moderately plastic; 15 percent rounded gravel; few fine masses of lime; continuous faint lime coats on surfaces of gravel; violently effervescent; moderately alkaline (pH 8.2).

Tiban Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Haplocryolls

Typical Pedon

Tiban very stony clay loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (7.5YR 4/2) very stony clay loam, dark brown (10YR 3/3) moist; very dark grayish brown (10YR 3/2) moist coats; weak medium subangular blocky structure parting to fine granular; slightly hard, friable, nonsticky and nonplastic; many very fine roots and pores; 35 percent subangular stones, cobbles, and gravel; neutral; clear smooth boundary.

Bw—4 to 13 inches; grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; many very fine roots and pores; 35 percent cobbles and gravel; many clear silt and fine sand grains; slightly alkaline; clear wavy boundary.

Bk—13 to 23 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; brown (10YR 4/3) moist coats; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; few very fine roots and pores; roots matted around rocks; 45 percent gravel; common distinct lime coats with incrustation on undersides of gravel; common fine masses of lime; strongly effervescent; moderately alkaline; clear wavy boundary.

C—23 to 60 inches; light reddish brown (2.5YR 6/4) very gravelly clay loam, red (2.5YR 4/6) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots and pores; 50 percent stones, cobbles, and gravel of limestone, quartzite, and sandstone; lime coats on undersides of subangular rock fragments; strongly effervescent; moderately alkaline.

Tibkey Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Fluvaquentic Haplocryolls

Typical Pedon

Tibkey mucky silt loam, bouldery (Colors are for dry soil unless otherwise noted.)

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) mucky silt loam, very dark brown (10YR 2/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; 10 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

A2—2 to 8 inches; very dark gray (10YR 3/1) mucky silt loam, black (10YR 2/1) moist; strong medium prismatic structure parting to moderate fine and medium

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subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw1—8 to 13 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 40 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bw2—13 to 25 inches; light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles, 30 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bw3—25 to 32 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; few fine distinct yellowish brown (10YR 5/6) redox concentrations; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 5 percent cobbles, 30 percent gravel; neutral (pH 6.8); gradual irregular boundary.

BC—32 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; common fine prominent strong brown (7.5YR 5/6) redox concentrations; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 5 percent cobbles, 40 percent gravel; slightly alkaline (pH 7.4).

Tibson Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustic Calcicryolls

Typical Pedon

Tibson cobbly loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; very dark grayish brown (10YR 3/2) cobbly loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine irregular pores; 10 percent cobbles, 10 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bw—4 to 8 inches; dark brown (10YR 3/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular pores; 10 percent cobbles, 10 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); gradual wavy boundary.

Bk1—8 to 14 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and moderately plastic; common very fine and fine roots; common fine tubular pores with lime coats and masses filling pores; many medium masses of lime; 15 percent cobbles, 20 percent gravel; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—14 to 60 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; weak coarse prismatic structure; very hard, firm, slightly sticky and moderately plastic; common very fine roots to 42 inches and few very fine roots below this depth; common medium masses of lime; 20 percent cobbles, 30 percent gravel; violently effervescent; moderately alkaline (pH 8.2).

Tigeron Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Tigeron flaggy sandy loam (Colors are for dry soil unless otherwise noted.)

- O—1 inch to 0; forest litter of undecomposed and decomposed needles, twigs, and cones.
- E1—0 to 3 inches; light brownish gray (10YR 6/2) flaggy sandy loam, very dark grayish brown (10YR 3/2) moist; strong thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; continuous coats of sand grains on surface of plates; 10 percent flagstones, 5 percent channers; strongly acid (pH 5.4); clear wavy boundary.
- E2—3 to 7 inches; light gray (10YR 7/2) flaggy sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; continuous coats of sand grains on plates; 20 percent flagstones, 10 percent channers; strongly acid (pH 5.4); clear wavy boundary.
- E and Bt—7 to 13 inches; E part (75 percent) is light gray (10YR 7/2) flaggy sandy loam, grayish brown (10YR 5/2) moist; Bt part (25 percent) is pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist 1/16- to 3/8-inch thick lamellae; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and few medium pores in the E and lamellae; thin clay films in root channels; 20 percent flagstones, 10 percent channers; strongly acid (pH 5.4); clear wavy boundary.
- Bt and E—13 to 24 inches; Bt part (60 percent) is pale brown (10YR 6/3) very flaggy sandy clay loam, dark brown (10YR 4/3) moist 1/16- to 1/2-inch thick lamellae; E part (40 percent) is light gray (10YR 7/2) sandy loam, dark grayish brown (10YR 4/2) moist; strong very fine and fine blocky structure; very hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; many very fine and fine and few medium pores; continuous faint clay films on faces of peds and on undersides of rock fragments and in root channels; 30 percent flagstones, 15 percent channers; strongly acid (pH 5.4); gradual wavy boundary.
- Bt—24 to 61 inches; pale brown (10YR 6/3) extremely flaggy sandy clay loam, brown (10YR 4/3) moist; strong fine and medium blocky structure; extremely hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; many very fine and fine and few medium pores; continuous prominent clay films on all faces of peds and in root channels; continuous prominent clay films on all surfaces of smaller fragments and on undersides of larger fragments; common faint coats of sand grains on faces of peds and on surfaces of rock fragments; 30 percent flagstones, 30 percent channers; strongly acid (pH 5.4); gradual wavy boundary.
- 2C—61 to 67 inches; gray (10YR 6/1) very flaggy loam, dark gray (10YR 4/1) moist; massive; extremely hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine and fine pores; 30 percent flagstones; 20 percent channers.

Tolbert Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls

Typical Pedon

Tolbert very cobbly loam, bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 30 percent cobbles, 10 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt—7 to 12 inches; brown (10YR 5/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds and bridging sand grains; 40 percent cobbles, 15 percent gravel; neutral (pH 6.8).

R—12 to 60 inches; hard, fine-grained igneous rock.

Torpy Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Ustivitrandid Haplocryepts

Typical Pedon

Torpy gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inches; forest litter of partially decomposed needles and twigs.

A—1 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine and fine pores; 15 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

E—4 to 9 inches; light brownish gray (10YR 6/2) loam, grayish brown (10YR 5/2) moist; weak medium granular structure; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; common very fine and fine pores; 10 percent gravel; slightly acid (pH 6.2); gradual smooth boundary.

Bw—9 to 35 inches; light gray (10YR 7/2) very cobbly loam, grayish brown (10YR 5/2) moist; moderate medium angular blocky structure; soft, very friable, slightly sticky and moderately plastic; common very fine and few fine roots; common very fine and fine pores; 20 percent cobbles, 25 percent gravel; slightly acid (pH 6.4); gradual smooth boundary.

BC—35 to 61 inches; light gray (10YR 7/1) very cobbly loam, gray (10YR 5/1) moist; single grain; loose, slightly sticky and slightly plastic; 25 percent cobbles, 25 percent gravel; few coarse roots; slightly acid (pH 6.5).

Trapps Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Trapps gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—2 inches to 0; undecomposed and slightly decomposed forest litter.

E—0 to 10 inches; light gray (10YR 7/2) gravelly loam, grayish brown (10YR 5/2) moist; moderate fine and medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many very fine pores; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt—10 to 24 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; many very fine, fine, medium, and coarse roots; many very fine pores; common distinct clay films on faces of peds; 40 percent gravel; slightly alkaline (pH 7.8); clear wavy boundary.

Bk1—24 to 35 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; common very fine pores; lime coats on undersides of gravel; 50 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk2—35 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, medium, and coarse roots; common very fine pores; lime coats on undersides of coarse fragments; 20 percent cobbles, 50 percent gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4).

Tropal Series

Taxonomic Class: Loamy-skeletal, carbonatic Lithic Calcicryepts

Typical Pedon

Tropal very gravelly loam, bouldery (Colors are for dry soil unless otherwise noted.)

Oi—0.5 to 0 inches; partially decomposed needles, twigs, and leaves.

A—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure, slightly hard, very friable, nonsticky and nonplastic; many fine roots; common very fine and fine pores; 5 percent cobbles, 40 percent gravel; continuous distinct lime coats on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk—4 to 16 inches; light gray (10YR 7/2) extremely gravelly loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; common very fine and fine pores; 10 percent cobbles, 50 percent gravel; continuous prominent lime casts on rock fragments; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

R—16 to 60 inches; light gray (10YR 7/1) hard limestone.

Tuggle Series

Taxonomic Class: Loamy, mixed, superactive Lithic Haplocryolls

Typical Pedon

Tuggle gravelly coarse sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; dark brown (10YR 3/3) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine and few medium pores; 20 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bw—7 to 11 inches; brown (10YR 4/3) gravelly coarse sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and few fine tubular and interstitial pores; 20 percent gravel; neutral (pH 7.3); clear wavy boundary.

BC—11 to 15 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky

and nonplastic; many very fine, common fine, and few medium roots; many very fine and few fine tubular and interstitial pores; 25 percent gravel; neutral (pH 7.3); gradual wavy boundary.

Cr—15 to 18 inches; light brownish gray (10YR 6/2) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand.

R—18 to 60 inches; hard granite bedrock.

Turrah Series

Taxonomic Class: Fine, mixed, superactive, frigid Cumulic Endoaquolls

Typical Pedon

Turrah silty clay loam (Colors are for moist soil unless otherwise noted.)

A1—0 to 4 inches; black (10YR 2/1) silty clay loam, black (10YR 2/1) dry; moderate fine and medium subangular structure; very hard, firm, moderately sticky and moderately plastic; many very fine roots; many very fine pores; slightly acid (pH 6.5); abrupt smooth boundary.

A2—4 to 12 inches; black (10YR 2/1) clay, black (10YR 2/1) dry; moderate fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; many very fine roots; many very fine pores; common fine distinct brownish yellow (10YR 6/6 dry) redox concentrations; neutral (pH 7.0); clear smooth boundary.

Bg1—12 to 22 inches; very dark gray (10YR 3/1) clay, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common fine roots; many very fine pores; common black (10YR 2/1) organic stains; common medium distinct brownish yellow (10YR 6/6) dry redox concentrations; neutral (pH 7.0); clear smooth boundary.

Bg2—22 to 38 inches; very dark gray (10YR 3/1) clay, dark gray (10YR 4/1) dry; strong medium subangular blocky structure; very hard, firm, moderately sticky and very plastic; common very fine and fine roots; common very fine pores; many fine and medium prominent brownish yellow (10YR 6/6 dry) and dark brownish yellow (10YR 4/4 dry) redox concentrations; slightly alkaline (pH 7.5); abrupt smooth boundary.

2Cg—38 to 60 inches; gray (5Y 5/1) extremely gravelly sandy clay loam, grayish brown (2.5Y 5/2) dry; massive; very hard, friable, moderately sticky and moderately plastic; 60 percent gravel; common fine distinct brownish yellow (10YR 6/6 dry) and dark brownish yellow (10YR 4/4 dry) redox concentrations; slightly alkaline (pH 7.5).

Vision Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Vision gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 0.5 inch; forest litter of partially decomposed twigs and needles.

A1—0.5 to 3 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine pores; 5 percent cobbles, 13 percent angular gravel; slightly acid (pH 6.4); abrupt smooth boundary.

A2—3 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable,

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slightly sticky and slightly plastic; many fine and common medium roots; 5 percent angular cobbles, 20 percent angular gravel; slightly acid (pH 6.4); clear wavy boundary.

Bt1—7 to 12 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine tubular and interstitial pores; common faint dark brown (10YR 3/3) moist clay films on faces of peds; 5 percent angular cobbles, 25 percent angular gravel; slightly acid (pH 6.4); gradual smooth boundary.

Bt2—12 to 20 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine and medium roots; many very fine and fine tubular and interstitial pores; common distinct dark yellowish brown (10YR 4/4) moist clay films on faces of peds and lining pores; 5 percent angular cobbles, 35 percent angular gravel; slightly acid (pH 6.4); clear smooth boundary.

Bt3—20 to 36 inches; very pale brown (10YR 7/2) very gravelly clay loam, brown (10YR 5/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine and medium and few coarse roots; many very fine and fine tubular and interstitial pores; common distinct dark yellowish brown and yellowish brown (10YR 4/4 and 5/4) clay films on faces of peds and lining pores; 10 percent angular cobbles, 40 percent angular gravel; slightly acid (pH 6.4); clear wavy boundary.

BC—36 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common medium and few coarse roots; many very fine and fine tubular and interstitial pores; common distinct dark yellowish brown (10YR 4/4) stains on coarse fragments; 5 percent angular stones, 15 percent angular cobbles, 45 percent angular gravel; neutral (pH 6.6).

Vitroff Series

Taxonomic Class: Fine-loamy, mixed, superactive Vitrandic Haplocryalfs

Typical Pedon

Vitroff ashy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; forest litter of slightly decomposed needles, twigs, and roots.

E1—1 to 3 inches; light brownish gray (10YR 6/2) ashy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine tubular pores; 2 percent angular gravel; slightly acid (pH 6.2); clear smooth boundary.

E2—3 to 8 inches; very pale brown (10YR 7/3) ashy loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine tubular pores; 10 percent angular gravel; neutral (pH 6.6); clear smooth boundary.

Bt and E—8 to 15 inches; Bt part (65 percent) is brown (10YR 4/3) gravelly ashy clay loam lamellae 1/2- to 5/8-inches thick, very dark grayish brown (2.5Y 3/2) moist; E part (35 percent) is very pale brown (10YR 7/3) ashy sandy clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; Bt part is hard, firm, moderately sticky and moderately plastic; E part is slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and

- few coarse roots; common very fine and few fine tubular pores; 5 percent angular cobbles, 20 percent gravel; neutral (pH 6.8); gradual wavy boundary.
- Bt—15 to 33 inches; pale brown (10YR 6/3) gravelly ashy clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; common very fine and few fine and medium roots; common very fine and few fine tubular pores; common faint clay films on faces of peds; 10 percent angular cobbles, 20 percent gravel; neutral (pH 7.2); diffuse wavy boundary.
- BC—33 to 60 inches; light gray (10YR 7/2) extremely gravelly ashy coarse sandy loam, olive brown (2.5Y 4/3) moist; massive; loose, nonsticky and nonplastic; few very fine and fine roots in the upper 2 feet; 20 percent angular cobbles, 50 percent gravel; slightly alkaline (pH 7.4).

Waldbillig Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Andic Haplocrypts

Typical Pedon

Waldbillig gravelly ashy silt loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.
- Bw—2 to 12 inches; light brown (7.5YR 6/4) gravelly ashy silt loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine, medium, and coarse roots; many fine pores; 25 percent gravel; moderately acid (5.6); clear wavy boundary.
- 2E—12 to 28 inches; pink (5YR 7/3) very gravelly fine sandy loam, reddish brown (5YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots; many fine pores; 10 percent cobbles, 30 percent gravel; slightly acid (pH 6.2); gradual wavy boundary.
- 2E and Bt—28 to 60 inches; E part (75 percent) is light reddish brown (5YR 6/3) very gravelly fine sandy loam, reddish brown (5YR 5/4) moist; B part (25 percent) is reddish brown (5YR 5/4) very fine sandy loam lamellae 1/4- to 1/2-inch thick, dark reddish brown (5YR 3/4) moist; texture mixed is very gravelly fine sandy loam; weak medium subangular blocky structure; very hard, very friable, nonsticky and nonplastic; few fine roots; many fine pores; 15 percent cobbles, 35 percent gravel; neutral (pH 6.9).

Warneke Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Lithic Calcicustepts

Typical Pedon

Warneke gravelly loam (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; 5 percent cobbles, 20 percent gravel; disseminated lime; strongly effervescent; moderately alkaline (pH 8.3); clear wavy boundary.
- Bk—4 to 15 inches; very pale brown (10YR 7/3) very channery loam, pale brown (10YR 6/3) moist; moderate fine subangular blocky structure; hard, friable, moderately sticky and slightly plastic; few fine and medium roots; common very fine and fine pores; 15 percent flagstones, 25 percent channers; disseminated

lime; continuous distinct lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
R—15 to 60 inches; limestone with few fractures.

Warwood Series

Taxonomic Class: Fine-loamy, mixed, superactive Eutric Glossocryalfs

Typical Pedon

Warwood loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 3 inches; forest litter of slightly decomposed needles, twigs, and leaves.
- A—3 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine and fine tubular pores; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
- E—7 to 13 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium and coarse roots; many very fine tubular pores; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
- E/Bt—13 to 18 inches; E part (80 percent) is light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist tongues; Bt part (20 percent) is grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common tubular pores; common faint clay films in pores and bridging sand grains of Bt part; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
- Bt/E—18 to 23 inches; Bt part (60 percent) is grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; E part (40 percent) is light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist tongues; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common fine tubular pores; common distinct clay films on faces of peds and in pores of Bt part; 5 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
- Bt1—23 to 48 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, moderately sticky and moderately plastic; common very fine roots; many very fine tubular pores; many distinct clay films on faces of peds; 5 percent gravel; neutral (pH 7.0); gradual wavy boundary.
- Bt2—48 to 60 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; very hard, friable, moderately sticky and moderately plastic; few very fine roots; many very fine tubular pores; few faint clay films on faces of peds; 5 percent gravel; neutral (pH 7.0).

Whitecow Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Typic Calcicustepts

Typical Pedon

Whitecow gravelly loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1 inch; undecomposed forest litter of needles and twigs.

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- A—1 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and few medium roots; 25 percent subrounded gravel; slightly effervescent; moderately alkaline; clear smooth boundary.
- Bk1—4 to 11 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; common fine pores; 5 percent angular cobbles, 40 percent angular gravel; continuous faint lime crusts on undersides of rock fragments; disseminated lime; violently effervescent; moderately alkaline; clear smooth boundary.
- Bk2—11 to 21 inches; light brownish gray (2.5Y 6/2) very gravelly loam, light olive brown (2.5Y 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; common and few fine roots; common fine pores; 5 percent angular cobbles, 50 percent angular gravel; continuous distinct lime coats on rock fragments; disseminated lime; violently effervescent; moderately alkaline; gradual wavy boundary.
- Bk3—21 to 31 inches; light brownish gray (2.5Y 6/2) extremely gravelly loam, light olive brown (2.5Y 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and slightly plastic; few fine roots; few fine pores; 5 percent angular cobbles, 70 percent angular gravel; continuous distinct lime coats on rock fragments; violently effervescent; moderately alkaline; gradual wavy boundary.
- Bk4—31 to 60 inches; light brownish gray (2.5Y 6/2) extremely gravelly loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, moderately sticky and slightly plastic; few fine roots; few fine pores; 5 percent angular cobbles, 70 percent angular gravel; violently effervescent; moderately alkaline.

Whitlash Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lithic Haplustolls

Typical Pedon

Whitlash gravelly loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.
- A2—4 to 9 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, very friable, slightly sticky and slightly plastic; 5 percent cobbles, 20 percent gravel; neutral (pH 6.8); clear smooth boundary.
- Bw—9 to 16 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; 15 percent cobbles, 35 percent gravel; neutral (pH 7.0); abrupt smooth boundary.
- R—16 to 60 inches; igneous bedrock.

Whitore Series

Taxonomic Class: Loamy-skeletal, carbonatic Typic Calcicryepts

Typical Pedon

Whitore channery loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; decomposed and slightly decomposed forest litter.

A—2 to 5 inches; dark grayish brown (10YR 4/2) channery loam, very dark gray (10YR 3/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common fine and medium pores; 25 percent channers; slightly alkaline (pH 7.4); clear irregular boundary.

Bw—5 to 14 inches; pale brown (10YR 6/3) channery loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine pores; 25 percent channers; disseminated lime; slightly effervescent; slightly alkaline (pH 7.4); gradual smooth boundary.

Bk1—14 to 25 inches; light gray (10YR 7/2) very channery loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots, some forming horizontal root mats on rock fragments; 50 percent channers; common distinct lime casts on surfaces and pendants on undersides of rock fragments; disseminated lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bk2—25 to 60 inches; very pale brown (10YR 8/2) extremely channery loam, light brownish gray (10YR 6/2) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots, some forming horizontal root mats on rock fragments; 60 percent channers; many distinct lime casts on surfaces and pendants on underside of rock fragments; disseminated lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Wickes Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Argiustolls

Typical Pedon

Wickes very gravelly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, moderately sticky and slightly plastic; many very fine and few fine roots; many very fine and fine interstitial pores; 10 percent cobbles, 30 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt1—8 to 15 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and few fine roots; many very fine and fine interstitial and tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; 15 percent cobbles, 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt2—15 to 24 inches; light olive brown (2.5Y 5/4) very cobbly loam, olive brown (2.5Y 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, moderately sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 30 percent cobbles, 25 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—24 to 30 inches; light yellowish brown (2.5Y 6/4) extremely cobbly loam, olive brown (2.5Y 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots;

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common very fine and fine interstitial and tubular pores; 40 percent cobbles, 25 percent gravel; common fine masses of lime, common distinct lime coats on rock fragments; strongly effervescent; slightly alkaline (pH 7.6).

R—30 to 60 inches; dark gray (10YR 4/1) hard, fine-grained igneous bedrock.

Wildgen Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Typical Pedon

Wildgen gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 1 inch; undecomposed and slightly decomposed forest litter.

A—1 to 7 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 20 percent gravel; neutral (pH 6.6); clear smooth boundary.

E1—7 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few fine tubular pores; 35 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

E2—18 to 32 inches; light gray (10YR 7/1) very gravelly sandy loam, grayish brown (10YR 5/2) moist; weak coarse and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many fine and medium tubular pores; 20 percent cobbles, 35 percent gravel; slightly acid (pH 6.4); gradual wavy boundary.

E and Bt—32 to 60 inches; E part (75 percent) is light gray (10YR 7/1) very gravelly sandy loam, grayish brown (10YR 5/2) moist; B part (25 percent) is yellowish brown (10YR 5/4) very gravelly sandy loam lamellae 1/4- to 3/8-inch thick, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; many fine and medium tubular pores; 10 percent cobbles, 40 percent gravel; slightly acid (pH 6.2).

Wimper Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustolls

Typical Pedon

Wimper gravelly loam, stony (Colors are for dry soil unless otherwise noted.)

A—0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine pores; 20 percent gravel; neutral (pH 7.3); clear wavy boundary.

Bw—7 to 13 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and few fine and medium roots; many very fine and fine interstitial and tubular pores; 20 percent gravel; slightly alkaline (pH 7.6); clear wavy boundary.

Bk1—13 to 17 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common fine and few fine and medium roots; many very fine and fine interstitial and tubular pores; 35 percent gravel; many faint lime coats on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—17 to 31 inches; very pale brown (10YR 8/2) very gravelly loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine and fine interstitial and tubular pores; 40 percent gravel; few very fine and fine masses and threads of lime, continuous distinct lime casts on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.3); gradual wavy boundary.

Bk3—31 to 60 inches; light gray (10YR 7/2) very gravelly loam, light brownish gray (10YR 6/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine interstitial and tubular pores; 55 percent gravel; few very fine and fine masses and threads of lime, continuous faint lime coats on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.3).

Windham Series

Taxonomic Class: Loamy-skeletal, carbonatic, frigid Typic Calcicustolls

Typical Pedon

Windham gravelly clay loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; 15 percent limestone gravel; continuous distinct lime casts on undersides of gravel; slightly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bk1—6 to 12 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 5/3) moist; moderate very fine and fine subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine pores; 20 percent limestone gravel; continuous prominent casts and pendants on undersides of gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—12 to 18 inches; white (10YR 8/2) extremely gravelly loam, very pale brown (10YR 7/3) moist; massive; hard, friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine pores; 5 percent limestone cobbles, 55 percent limestone gravel; common fine masses of lime; continuous prominent lime casts and pendants on undersides of cobbles and gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4); diffuse wavy boundary.

Bk3—18 to 61 inches; very pale brown (10YR 7/4) extremely gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common and few very fine and fine pores; 10 percent cobbles, 60 percent limestone gravel; common fine masses of lime; continuous distinct lime casts and pendants on undersides of cobbles and gravel; disseminated lime; violently effervescent; moderately alkaline (pH 8.4).

Windlass Series

Taxonomic Class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplustolls

Typical Pedon

Windlass loam (Colors are for dry soil unless otherwise noted.)

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky

and slightly plastic; many very fine and fine roots; common very fine and fine pores; neutral (pH 7.2); clear smooth boundary.

Bw—10 to 14 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common fine and medium tubular pores; neutral (pH 7.0); clear wavy boundary.

2C1—14 to 19 inches; brown (10YR 5/3) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; 10 percent cobbles, 25 percent gravel; neutral (pH 7.0); gradual smooth boundary.

2C2—19 to 60 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; few fine distinct brownish yellow (10YR 6/8) and yellowish brown (10YR 5/8) moist redox concentrations; single grain; loose; nonsticky and nonplastic; common very fine and fine roots; 20 percent cobbles, 30 percent gravel; neutral (pH 7.0).

Windyridge Series

Taxonomic Class: Sandy-skeletal, mixed, shallow Typic Cryorthents

Typical Pedon

Windyridge very gravelly loamy coarse sand (Colors are for dry soil unless otherwise noted.)

A—0 to 2 inches; brown (10YR 5/3) very gravelly loamy coarse sand, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; many very fine interstitial pores; 50 percent gravel; very strongly acid; clear wavy boundary.

Bw—2 to 7 inches; brownish yellow (10YR 6/6) very gravelly loamy coarse sand, dark yellowish brown (10YR 4/6) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine interstitial and few very fine tubular pores; 50 percent gravel; very strongly acid; clear wavy boundary.

C—7 to 10 inches; very pale brown (10YR 7/4) very gravelly coarse sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 50 percent gravel; very strongly acid; clear wavy boundary.

Cr—10 to 20 inches; soft, weathered granodiorite.

Winkler Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Lamellic Haplustepts

Typical Pedon

Winkler very gravelly sandy loam (Colors are for dry soil unless otherwise noted.)

Oi—0 to 2 inches; undecomposed and slightly decomposed forest litter.

A—2 to 5 inches; grayish brown (10YR 5/2) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many fine pores; 40 percent angular gravel; slightly acid (pH 6.4); clear smooth boundary.

E1—5 to 10 inches; pinkish gray (7.5YR 6/2) very gravelly sandy loam, brown (7.5YR 5/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many fine pores; 40 percent angular gravel; slightly acid (pH 6.2); gradual wavy boundary.

- E2—10 to 27 inches; pinkish gray (7.5YR 6/2) very gravelly sandy loam, brown (7.5YR 5/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; many fine pores; 45 percent angular gravel; slightly acid (pH 6.2); gradual wavy boundary.
- E and Bt—27 to 44 inches; E part (75 percent) is pinkish gray (7.5YR 6/2) extremely gravelly sandy loam, brown (7.5YR 5/2) moist; B part (25 percent) is reddish gray (5YR 5/2) fine sandy loam lamellae 1/8- to 1/2-inch thick, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common very fine and fine pores; 20 percent angular cobbles, 50 percent angular gravel; moderately acid (pH 5.8); gradual wavy boundary.
- C—44 to 60 inches; pinkish gray (7.5YR 6/2) extremely gravelly sandy loam, brown (7.5YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine pores; 20 percent angular cobbles, 55 percent angular gravel; moderately acid (pH 5.6).

Winspect Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Calcicustolls

Typical Pedon

Winspect cobbly loam, 2 to 8 percent slopes (Colors are for dry soil unless otherwise noted.)

- A—0 to 4 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine and medium roots; common very fine and fine irregular pores; 10 percent cobbles, 10 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Ak—4 to 8 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; common very fine irregular pores; 15 percent cobbles, 10 percent gravel; disseminated lime; strongly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.
- Bk1—8 to 18 inches; light brownish gray (10YR 6/2) cobbly clay loam, dark grayish brown (10YR 4/2) moist; weak medium subangular structure; hard, friable, moderately sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; 20 percent cobbles, 10 percent gravel; many medium masses of lime; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.
- Bk2—18 to 60 inches; light gray (10YR 7/2) very cobbly clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; 25 percent cobbles, 25 percent gravel; common medium masses of lime; violently effervescent; moderately alkaline (pH 8.2).

Wissikihon Series

Taxonomic Class: Sandy, mixed Ustic Haplocryolls

Typical Pedon

Wissikihon gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

- A1—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft,

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- very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; 20 percent fine and medium gravel; slightly acid (pH 6.2); clear smooth boundary.
- A2—3 to 8 inches; dark brown (10YR 3/3) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and common fine and medium roots; few very fine and fine tubular pores; 20 percent fine and medium gravel; slightly acid (pH 6.2); clear smooth boundary.
- Bw—8 to 14 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; few very fine tubular pores; 30 percent fine gravel; slightly acid (pH 6.4); gradual clear smooth boundary.
- BC—14 to 48 inches; light brownish gray (10YR 6/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; massive; soft, loose, nonsticky and nonplastic; few very fine roots; 35 percent fine gravel; neutral (pH 6.6); gradual wavy boundary.
- Cr—48 to 60 inches; soft, weathered granite bedrock.

Worock Series

Taxonomic Class: Loamy-skeletal, mixed, superactive Eutric Haplocryalfs

Typical Pedon

Worock gravelly loam (Colors are for dry soil unless otherwise noted.)

- Oi—0 to 1 inch; partially decomposed forest litter.
- E—1 to 7 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine irregular pores; 5 percent stones, 5 percent cobbles, 15 percent gravel; moderately acid (pH 5.6); clear smooth boundary.
- E/Bt—7 to 18 inches; E part (85 percent) very pale brown (10YR 7/4), Bt part (15 percent) yellowish brown (10YR 5/4) very gravelly clay loam, yellowish brown (10YR 5/6) moist for both parts; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine irregular pores; 5 percent stones, 5 percent cobbles, 25 percent gravel; moderately acid (pH 5.6); clear smooth boundary.
- Bt—18 to 28 inches; yellowish brown (10YR 5/6) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; weak medium subangular blocky structure parting to weak medium granular; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine irregular pores; many distinct clay films on faces of peds; 5 percent stones, 10 percent cobbles, 30 percent gravel; moderately acid (pH 5.6); clear smooth boundary.
- BC—28 to 62 inches; light yellowish brown (10YR 6/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; few very fine irregular pores; 5 percent stones, 15 percent cobbles, 35 percent gravel; moderately acid (pH 5.6).

Ymark Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Ymark very gravelly sandy loam, very bouldery (Colors are for dry soil unless otherwise noted.)

Oi—1 to 0 inches; partially decomposed needles, twigs, and leaves.

A—0 to 6 inches; dark grayish brown (10YR 4/2) very gravelly sandy loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine pores; 15 percent cobbles, 25 percent gravel; neutral (pH 7.1); clear smooth boundary.

Bt1—6 to 10 inches; brown (10YR 5/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and few fine pores; few faint clay films on faces of ped and bridging sand grains; 15 percent cobbles, 25 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt2—10 to 22 inches; yellowish brown (10YR 5/4) very cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, moderately sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine and few fine tubular and interstitial pores; many faint clay films on faces of ped and bridging sand grains; 30 percent cobbles, 20 percent gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt3—22 to 36 inches; yellowish brown (10YR 5/4) very cobbly coarse sandy clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; many faint clay films bridging sand grains; 30 percent cobbles, 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

BC—36 to 44 inches; yellowish brown (10YR 5/6) very cobbly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; many very fine and few fine tubular and interstitial pores; 10 percent stones, 25 percent cobbles, 20 percent gravel; neutral (pH 6.9); clear wavy boundary.

Cr—44 to 58 inches; olive (5Y 5/3) decomposed granite bedrock (grus) that crushes to very gravelly loamy coarse sand; neutral (pH 7.0).

R—58 to 60 inches; hard granite bedrock.

Yreka Series

Taxonomic Class: Loamy-skeletal, mixed, superactive, frigid Typic Haplustalfs

Typical Pedon

Yreka gravelly loam (Colors are for dry soil unless otherwise noted.)

Oi—2 to 0 inches; partially decomposed twigs and needles.

E—0 to 12 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 5/3) moist; strong medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine pores; 5 percent cobbles, 20 percent gravel; neutral; clear smooth boundary.

E/Bt—12 to 18 inches; E part (60 percent) is light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 5/3) moist; Bt part (40 percent) is brown (10YR 5/3)

very gravelly loam, dark brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, friable, nonsticky and nonplastic; common very fine, fine, and medium and few coarse roots; 10 percent cobbles, 25 percent gravel; neutral; clear smooth boundary.

Bt—18 to 60 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine, medium, and coarse roots; common very fine and fine pores; few faint clay films on faces of peds; 10 percent cobbles, 35 percent gravel; neutral.

Zonite Series

Taxonomic Class: Sandy-skeletal, mixed Lithic Cryorthents

Typical Pedon

Zonite very gravelly coarse sandy loam (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; brown (10YR 5/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial pores; 35 percent, mainly fine, gravel; slightly acid (pH 6.4); clear wavy boundary.

BC—4 to 9 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 45 percent, mainly fine, gravel; neutral (pH 6.6); abrupt wavy boundary.

Cr—9 to 13 inches; soft, weathered granite bedrock.

R—13 to 60 inches; hard granite bedrock.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the *National Soil Survey Handbook* (available in local offices of the Natural Resources Conservation Service or on the Internet at <http://soils.usda.gov/technical/handbook/>).

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal-unit-month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

| | |
|----------------|--------|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |

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High 9 to 12

Very High..... more than 12

- Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
- Badland.** A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.
- Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Base slope (geomorphology).** A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).
- Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.
- Blowout.** A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.
- Bottom land.** An informal term loosely applied to various portions of a flood plain.
- Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.
- Breaks.** A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.
- Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.
- Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.
- Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

- Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Canopy.** The leafy crown of trees or shrubs. (See Crown.)
- Canyon.** A long, deep, narrow valley with high, precipitous walls in an area of high local relief.
- Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.
- Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.
- Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.
- Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.
- Channery soil material.** Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.
- Chemical treatment.** Control of unwanted vegetation through the use of chemicals.
- Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.
- Cirque.** A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Clay depletions.** See Redoximorphic features.
- Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- Claypan.** A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.
- Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.
- Coarse textured soil.** Sand or loamy sand.
- Cobble** (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.
- COLE** (coefficient of linear extensibility). See Linear extensibility.
- Colluvium.** Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.
- Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.
- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them

separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the *Soil Survey Manual*.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion. (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate. A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be diminished by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diatomaceous earth. A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the *Soil Survey Manual*.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and grades from litter on the surface to underlying humus.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

- Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.
- Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.
- Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
- Erosion (geologic).* Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains.
Synonym: natural erosion.
- Erosion (accelerated).* Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or catastrophic in nature, such as fire, that exposes the surface.
- Erosion surface.** A land surface shaped by the action of erosion, especially by running water.
- Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.
- Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.
- Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is managed for at least one growing season for weed control and decomposition of plant residue.
- Fan remnant.** A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.
- Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
- Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.
- Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called normal field capacity, normal moisture capacity, or capillary capacity.
- Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.
- Fine-textured soil.** Sandy clay, silty clay, or clay.
- Firebreak.** An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.
- Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.
- Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.
- Flood plain.** The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

- Flood-plain landforms.** A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.
- Flood-plain splay.** A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.
- Flood-plain step.** An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.
- Fluvial.** Of or pertaining to rivers or streams; produced by stream or river action.
- Foothills.** A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).
- Footslope.** The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- Forb.** Any herbaceous plant not a grass or a sedge.
- Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.
- Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.
- Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Gilgai.** Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.
- Glaciofluvial deposits.** Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.
- Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.
- Gravel.** Rounded or angular fragments of rock as much as 3 inches (7.6 centimeters) in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.
- Green manure crop (agronomy).** A soil-improving crop grown to be terminated in an early stage of maturity or soon after maturity.
- Ground water.** Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R horizon.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impacted, moderately. Moderately impacted soils generally have good ground coverage, but plant species present are mainly restricted to those tolerant of the effects of surface mining and smelting activities.

Impacted, severely. Severely impacted soils have substantial barren areas, and the plant species present are only those that can tolerate the extreme effects of surface mining and smelting activities.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

| | |
|---------------------|-----------------|
| Less than 0.2..... | very low |
| 0.2 to 0.4 | low |
| 0.4 to 0.75 | moderately low |
| 0.75 to 1.25 | moderate |
| 1.25 to 1.75 | moderately high |
| 1.75 to 2.5 | high |
| More than 2.5 | very high |

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is

generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Also, these plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat} . Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium-textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit component that has little or no natural soil and supports little or no vegetation.

Miscellaneous water. A sewage lagoon, an industrial waste pit, a fish hatchery, or a similar water area.

Moderately coarse-textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine-textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—few, common, and many; size—fine, medium, and coarse; and contrast—faint, distinct, and prominent. The size

measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

| | |
|---------------------|-----------------------|
| Very low | less than 0.5 percent |
| Low | 0.5 to 1.0 percent |
| Moderately low..... | 1.0 to 2.0 percent |
| Moderate..... | 2.0 to 4.0 percent |
| High | 4.0 to 8.0 percent |
| Very high..... | more than 8.0 percent |

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash fan. A fan-shaped accumulation of outwash deposited by meltwater streams in front of the end or recessional moraine of a glacier. Coalescing outwash fans form an outwash plain.

Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Outwash terrace. A flat-topped bank of outwash with an abrupt outer face (scarp or riser) extending along a valley downstream from an outwash plain or terminal moraine; a valley train deposit.

- Paleoterrace.** An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.
- Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.
- Parent material.** The unconsolidated organic and mineral material in which soil forms.
- Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)
- Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.
- Pedisediment.** A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.
- Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
- Percolation.** The movement of water through the soil.
- Permafrost.** Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.
- Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the *Soil Survey Manual*. In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:
- | | |
|------------------------|------------------------|
| Impermeable..... | less than 0.0015 inch |
| Very slow | 0.0015 to 0.06 inch |
| Slow | 0.06 to 0.2 inch |
| Moderately slow..... | 0.2 to 0.6 inch |
| Moderate | 0.6 inch to 2.0 inches |
| Moderately rapid | 2.0 to 6.0 inches |
| Rapid | 6.0 to 20 inches |
| Very rapid | more than 20 inches |
- pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)
- Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.
- Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.
- Pitting** (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.
- Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.
- Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.
- Plateau** (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.
- Playa.** The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

- Plowpan.** A compacted layer formed in the soil directly below the plowed layer.
- Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.
- Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.
- Pore linings.** See Redoximorphic features.
- Potential native plant community.** See Climax plant community.
- Potential rooting depth** (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.
- Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.
- Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.
- Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.
- Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.
- Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.
- Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

| | |
|------------------------------|----------------|
| Ultra acid | less than 3.5 |
| Extremely acid | 3.5 to 4.4 |
| Very strongly acid..... | 4.5 to 5.0 |
| Strongly acid | 5.1 to 5.5 |
| Moderately acid..... | 5.6 to 6.0 |
| Slightly acid..... | 6.1 to 6.5 |
| Neutral | 6.6 to 7.3 |
| Slightly alkaline | 7.4 to 7.8 |
| Moderately alkaline | 7.9 to 8.4 |
| Strongly alkaline..... | 8.5 to 9.0 |
| Very strongly alkaline | 9.1 and higher |

- Red beds.** Sedimentary strata that are mainly red and are made up largely of sandstone and shale.
- Redox concentrations.** See Redox features.
- Redox depletions.** See Redox features.
- Redox features.** Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are

oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redox concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
 - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
 - C. Pore linings, i.e., zones of accumulation along pores that may be either coats on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redox depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
 - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coats or skeletons).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as bedrock weathers in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, gravel, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without soaking into the soil is called surface runoff.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

- Sandstone.** Sedimentary rock containing dominantly sand-sized particles.
- Sapric soil material** (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.
- Saturated hydraulic conductivity (K_{sat}).** See Permeability.
- Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
- Scarification.** The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.
- Sedimentary rock.** A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.
- Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
- Series, soil.** A group of soils that have profiles that are almost alike. All the soils of a given series have horizons that are similar in composition, thickness, and arrangement.
- Shale.** Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.
- Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Shoulder.** The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.
- Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Side slope** (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Siltstone.** An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.
- Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Sinkhole.** A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.
- Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height

attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

| | |
|-------------------------|----------------------|
| Nearly level | 0 to 2 percent |
| Gently sloping | 2 to 4 percent |
| Moderately sloping..... | 4 to 8 percent |
| Strongly sloping | 8 to 15 percent |
| Moderately steep | 15 to 25 percent |
| Steep | 25 to 45 percent |
| Very steep..... | more than 45 percent |

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded gravel or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

| | |
|----------------|----------------|
| Slight | less than 13:1 |
| Moderate | 13-30:1 |
| Strong..... | more than 30:1 |

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

| | |
|-----------------------|--------------|
| Very coarse sand..... | 2.0 to 1.0 |
| Coarse sand | 1.0 to 0.5 |
| Medium sand | 0.5 to 0.25 |
| Fine sand..... | 0.25 to 0.10 |
| Very fine sand..... | 0.10 to 0.05 |

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Silt.....0.05 to 0.002

Clay..... less than 0.002

- Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.
- Stone line.** In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.
- Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.
- Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.
- Strath terrace.** A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).
- Stream terrace.** One of a series of surfaces in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.
- Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).
- Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.
- Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.
- Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.
- Substratum.** The part of the soil below the solum.
- Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.
- Summer fallow.** Management of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.
- Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or slightly convex) surface.
- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”
- Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.
- Talus.** Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.
- Terminal moraine.** An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.
- Terrace (geomorphology).** A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.
- Terracettes.** Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.
- Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."
- Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.
- Till.** Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.
- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Toeslope.** The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.
- Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- Tread.** The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.
- Tuff.** A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.
- Upland.** An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.
- Valley fill.** The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.
- Variation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
- Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers

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seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

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