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NORTH TONTO TERRESTIAL ECOSYSTEMS

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NORTH TONTO TERRESTIAL ECOSYSTEMS

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Climate

The survey area occurs within the two climatological gradients of Low Sun-Mild and Low Sun-Cold. The climate is a consequence of complex topography and the 1800 meter range in elevation. The elevation ranges from a low of 610 meters near Horseshoe Dam to a high of 2410 meters at Mazatzal Peak. The climate varies from warm-dry at the lower elevations to cold-wet at the highest elevations. The information presented in this section is based upon climatic station data. Ranges given may be exceeded at either elevation extremes.

Average annual precipitation ranges from 28 to over 86 centimeters. Precipitation distribution is bimodal. Approximately 55 percent of the average annual precipitation occurs during the low-sun half year period (01 October - 31 March). Mean annual total snowfall ranges from 0 to over 170 centimeters. However, at the lower elevations snow cover does not persist for more than a few days.

Average annual temperature range from 20 degrees Celsius at the lower elevations to less than 7 degrees Celsius at the higher elevations. For the month of January, mean minimum temperatures range from 10 degrees Celsius to -4 degrees Celsius; mean maximum temperatures range from 24 degrees Celsius to 10 degrees Celsius. For the month of July, mean minimum temperatures range from 25 degrees Celsius to 5 degrees Celsius; mean maximum temperatures range from 47 degrees Celsius to 24 degrees Celsius. The average date of the last spring killing freeze ranges from March 15 through May 15. The average date of the first fall killing freeze ranges from October 15 through December 15. Thus the freeze-free period ranges from approximately 260 days at the lowest elevations to less than 150 days at the highest elevations.

How the Survey Was Made

Mapping was done on 1:30000, 1:24000 and 1:18000 aerial photographs. The information was transferred to a 1:31680 base map which is included in this report.

Mapping units were delineated by steroscopic examination of aerial photographs. The basis of delineations were differences in topography, geology and vegetation. Field documentation was made to identify map unit components and to verify accuracy of the delineations.

How to Use This Report.

1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map.

4. List the Map unit symbols that are in your area of interest.

5. Turn to "Table 1 Acreage, Proportionate Extent and Index to Map Units" which lists the names of each map unit and the page where that map unit is described and interpreted.

6. Refer to specific pages for information pertaining to a map unit and its associated interpretations.

7. Use the report in the field and in the office. Add your own comments and observations about how the various map units perform under identified management practices.

Use and Management of the Terrestrial Ecosystem

Information in this section of the report presents important properties pertaining to the nature and behavioral characteristics of the terrestrial ecosystem. It is the basis for making interpretations.

Information can be used for generating additional interpretations. Absence of entry (e.g., ---) indicates that: (1) Information was not available, (2) Not estimated, or (3) Not a concern. The interpretations presented are limited to those currently receiving the most use. Information is presented as an ecological unit. This facilitates evaluation of impacts on the whole unit.

The form entitled "Map Unit Description, Properties and Selected Interpretations" is divided into six sections. These sections are as follows:

1.0 - This section lists information pertaining to the survey area, map symbol, name, and setting. The setting consists of a narrative description of the map unit. The map unit description in this section, along with the maps, can be used to determine the suitability and potential of a terrestrial ecosystem for specific uses. It also can be used to plan the management needed for those uses. Each map unit on the maps represents an area on the landscape and consists of one or more terrestrial ecosystems for which the unit is named.

Four kinds of map units are shown on the maps: consociations, complexes, associations, and undifferentiated groups.

A consociation is a map unit consisting of a single terrestrial ecosystem. An example is Typic Eutroboralfs, HSC, 5, 0, fine, mixed: Pipo/Quga, 15 to 40 percent slopes.

A complex is a map unit consisting of two or more terrestrial ecosystems so intermingled or so small that they cannot be shown separately on the maps at a scale of 1:24,000. Each area of a complex contains some of each of the two or more dominant terrestrial ecosystem, and the pattern and relative proportions are about the same in all areas. The name of a terrestrial ecosystem complex consists of the names of the dominant terrestrial ecosystems. An example is Typic Eutroboralfs, HSC, 5, 0, fine, mixed - Lithic Eutroboralfs, HSC, 5, 0, clayey, mixed: Pipo/Quga, 15 to 40 percent slopes.

An association is a map unit consisting of two or more terrestrial ecosystems that occur as areas large enough to be shown individually on the maps but are shown as one unit because use and management does not justify seperation. There is a degree of uniformity in pattern and relative extent of the dominate terrestrial ecosystem, but they can differ greatly one from another. The name of an association consists of the names of the dominant terrestrial ecosystems. An example is Typic Eutroboralfs, HSC, 5, 0, fine, mixed-Lithic Eutroboralfs, HSC, 5, 0, clayey mixed: Pipo/Quga, association, 15 to 40 percent slopes.

An undifferentiated group is a map unit consisting of two or more terrestrial ecosystems that are not consistently associated geographically. They are included in the same map unit because use and management are the same or very similar for common uses. These units are often highly variable in properties. An example is Eutroboralfs and Dystrochrepts, HSC, 5 and 6, frigid: Pipo/Quga, 40 to 120 percent slopes.

Miscellaneous areas can occur as a component in any of the various kinds of map units. Examples are riverwash and rock outcrop.

2.0 - This section contains information by map unit components, characteristics and composition.

Terrestrial ecosystems are recognized by the interaction of three major components. These components are soil, climate, and vegetation. Some land areas have little or no soil material and support little or no vegetation. Examples are granite rock outcrop, riverwash, etc. Taxa for soil and vegetation are listed in the appropriate column. Miscellaneous areas are also listed in this column. Climate is indicated as a generalized class. Information listed for phase serves as a functional grouping created for a specific purpose. Designated soil phases reflect differences in soil or environmental features that are significant to use and management.

Climatic class locates the terrestrial ecosystem in one of four major climatic areas. These climatic classes are based on the following criteria:

Six month season with greater than one-half of the annual precipitation	Winter	Soil Temp.Regime (Forest-Pipo)
HSM-High sun (HS) 01 April to 30 Sept.	Mild(M)	Mesic
HSC-High sun (HS) 01 April to 30 Sept.	Cold(C)	Frigid
LSM-low sun (LS) 01 Oct. to 31 Mar.	Mild(M)	Mesic
LSC-low sun (LS) 01 Oct. to 31 Mar.	Cold(C)	Frigid

Climax class provides the best evaluation of properties controlling the terrestrial ecosystem. All terrestrial ecosystems must meet a threshold for climatic limits. Deviation from climatic climax is attributed to properties grouped within the following climax classes:

1. Edaphic
2. Topographic
3. Fire
4. Zootic

Often the controlling factor for a particular terrestrial ecosystem is a combination of properties. An example is topo-edaphic. An explanation of the controlling factors is given where appropriate.

Abbreviations

MAP cm - mean annual precipitation - centimeters
ME m - mean elevation - meters
MAST deg.C - mean annual soil temperature - degrees Celsius.
MSST deg.C - mean summer soil temperature - degrees Celsius.
Comp. % - Map unit composition - percent

The section on landform, slope characteristics, and parent material, contains information relevent to a particular terrestrial ecosystem component.

Map unit composition is an indication of map unit purity. It is expressed as a percentage, by area, of the map unit.

3.0 - This section contains information on soil properties. A pedon representing the unit was selected for this use. The soil control section was used for determining soil engineering properties.

This information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in design and construction of engineering projects.

Intended use is for planning, evaluating land use alternatives, and identification of areas needing specific investigation. Properties can vary significantly within a particular map unit.

Abbreviations

Wt.	-	weight
mm	-	millimeter
Pass.	-	passing
Plast.	-	plasticity
Class.	-	classification
Durat.	-	duration
Hard.	-	hardness
Pot.	-	potential
Tol.	-	tolerance
Cur.	-	current
Nat.	-	natural
RF	-	rock fragments
Veg.	-	vegetation
Lit.	-	litter
BA	-	basal area

Depth to the upper and lower boundaries of each control section is indicated.

USDA texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to weight percentages of sand, silt, and clay in the fraction of soil that is less than 2 millimeters in diameter.

Percent by Wt. (size:mm) refers to the following three fractions of material:

1. less than .002 mm

This is a representation of the mineral soil within the clay fraction. The estimated clay content is given as a percentage, by weight, of the material that is less than 2 millimeters in diameter.

2. greater than 75 mm

3. 5 to 75 mm

Rock fragments are a percentage of the total soil on a dry-weight basis. The percentages are estimates determined by converting field volume estimates to weight percentages.

The percentage of material less than 75 millimeters in diameter that passes each of two sieves (U.S. standard) is estimated for the control section of each soil.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates of grain-size distribution, liquid limit and plasticity index are rounded to the nearest 5 percent.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 75 millimeters in diameter and according to plasticity index, liquid limit, and organic matter content.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the fraction less than 2 millimeters in diameter.

Soil wetness contains information about the depth to the wet state, duration of the wet state and the probable month(s) of occurance of the wet state.

Bedrock is the consolidated material underlying the soil. The rock is described as either soft or hard. If the rock is soft it can be excavated by backhoe, or small ripper. If the rock is hard, blasting and/or special equipment is needed for excavations. Rock fits within one of three broad groups (igneous, sedimentary or metamorphic). Where kind of rock is consistent it is listed (granite, limestone, etc.).

Erosion classes are based on estimated soil losses and are useful in evaluating the amount of degradation that has occurred to the soil resource. The two categories for erosion classes are water and wind.

Factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual soil loss by sheet and rill erosion. Soils having the highest K values are the most erodible.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

Sheet/rill erosion is the estimated rate of annual soil loss as predicted by the Universal Soil Loss Equation (USLE). Since litter can occur over rock fragments the total value for all surface components can exceed 100 percent of an area. Soil loss rates are useful as an index thus are not considered as absolute values. Soil losses are predicted for the four following categories:

1. Potential is the rate of soil loss that would occur under conditions of complete removal of the vegetation and the litter portion of groundcover (maximum rate).

2. Tolerance is the maximum rate of soil loss than can occur while sustaining inherent site productivity.

3. Current is the rate of soil loss occurring under existing conditions of groundcover.

4. Natural is the rate of soil loss that would occur under conditions associated with a climax category (minimum rate).

A value for vegetative ground cover is listed for each soil loss rate. Vegetative ground cover includes vegetation and litter.

Current surface components are represented by the following four major fractions:

Rock fragments (> 2 mm)
Vegetation (Basal area)
Litter (> 2.54 cm)
Soil

4.0 - This section contains interpretations for selected uses.

Explanation of the categories for interpretation follows.

Herbaceous/woody plant growth is an estimate in pounds per acre of the total annual yield (air-dry/normal year) of all plants from the soil surface to a height of 4 1/2 feet.

Forage is an estimate in pounds per acre of the annual yield (air-dry/normal year) of herbaceous/woody plants that may provide food for grazing animals. The zone of estimation is the same as for herbaceous/woody.

Forage maximum is an estimate in pounds per acre of the annual yield (air-dry/normal year) of forage assuming the removal of undesirable plants. This figure is used in evaluating projects where undesirable plants (juniper, etc.) are to be removed and forage production maximized.

The potential productivity of marketable or common trees on a terrestrial ecosystem is expressed as site index. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.

The potential productivity of fuelwood is expressed as cords per acre.

Revegetation potential refers to the probable success and ease in establishment of native grasses. This rating is influenced by climate, kinds of soils, and terrain. The initial stratification by soil climax yields limitations that are not normally economical to mitigate. The rating system is for use with a rangeland drill, broadcast seeder (hand held) and aerial seeding with no consideration for site preparation (removal of trees, etc.).

A low or moderate rating alerts the land manager to potential problems for successful revegetation of an area. Soils associated with a "high" rating offer the best opportunity for success. Separation of the most limiting soil climates leaves a wide range of soil climates to deal with. The udic/frigid combination offers the optimum soil climate for establishment of vegetation.

Reforestation potential refers to the probable success (survival) and ease in establishment of trees (hand and machine planting). This rating is influenced by climate, kinds of soils and terrain. The initial stratification by soil climate separates climatic limitations from remaining variables.

The term "topsoil" describes soil material used to cover an area so as to improve soil conditions for establishment and maintenance of adapted vegetation. Generally, the organic rich upper part of the soil is most desirable; however, material excavated from deeper layers is also used. In this rating, the upper 100 cm of soil material is evaluated for its use as topsoil.

Roadfill suitabilities pertain to the use of soils in the construction of roadfill. Roadfill consists of soil material that is excavated from its original position and used in road embankments elsewhere.

Wildlife habitat classes are a subjective correlation between the importance of a terrestrial ecosystem for selected wildlife species.

Timber harvest limitations are limits to be considered when evaluating the impact of timber harvest with regard to maintenance of soil productivity. Limits relate to year round or seasonal, use of equipment, as the result of climate, soil characteristics, and landform.

A moderate or severe rating directs the land manager to areas that require mitigation in order to avoid impairment of soil productivity. Logging systems can be employed that will adequately overcome many limitations. Seasons of logging can often be used to mitigate soil moisture problems (dry season or frozen/snow cover). Restrictions on slopes over 40 percent can be mitigated by a system of cable logging. Rock fragment classes 6 or 7 on level slopes will restrict access by tractor logging and probably cannot be overcome.

Cutbank stability (slumps) limits are for exposures of vertical cuts.
A rating for cutbank stability provides the land manager with information useful in the selection of road location and consequent use. An important assumption is that the rating is associated with the most limiting condition.

Unsurfaced road limitations pertain to the use of soils in place for roads. These roads are of low design and minimum construction cost (e.g., haul roads, etc.).

A moderate or severe rating alerts the land manager to problems in construction and maintenance of this category of roads. The majority are temporary, therefore, will receive a minimum of maintenance. Use of this information will allow for consideration of alternate routes avoiding mitigating problems and/or severe damage to the soil resource.

Trail limitations pertains to the use of soils in the construction of trails.

Campground limitations pertains to the use of soils in the construction and maintenance of developed campgrounds.
Wheeled off-road vehicle (ORV) limitations are limits on the use of this type of recreational activity.

Erosion hazard is predicted on the basis of relative susceptibility to erosion upon removal of vegetation and litter. Three classes are used.

Mass wasting is a general term for a variety of processes by which large masses of earth material are moved by gravity, either slowly or quickly from one place to another. This rating provides the land manager with information dealing with inherent stability.

Windthrow hazard is based on the probability of trees being up-rooted by the wind as a result of insufficient depth and strength of the soil to give adequate root anchorage.

Plant competition is based on the probability of the invasion or growth of undesirable plant species when openings are made in the woodland or forest canopy.

5.0 - Vegetation is described in this report as canopy coverage. Each species is assigned an average cover value representing the mean coverage of the modal vegetation associated with the mapping unit component. Modal vegetation is a synthetic description of vegetation representing the center of its sample variability. The sample variability for a particular vegetation type includes the range of coverage values for each species. The coverage values are therefore abstract generalities about vegetation potential over the mapping unit.

Vegetation reported as canopy coverage is a criterion of the relative dominance of each species, of potential productivity, of the influence of plants on precipitation interception and soil temperatures, and of the value of vegetation to animals. Canopy coverage is applicable to all terrestrial ecosystems because of the importance of sunlight coming from above. The use of canopy coverage permits all plants ranging in size from small herbs to large trees to be compared on a common basis, whether or not different sized plots are used to measure plants of different stature. Evaluations precise enough for research or inventory purposes usually do not require lengthy field time.

6.0 - This section contains additional information relevant to management of the terrestrial ecosytem component. Unique natural features are also listed in this section.

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Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
9	Typic Torrifluvents, --- --- thermic	deep --- loamy sand water table	LSM 2	Prve	Topo-edaphic	0-15	3826	.4	27
15	Fluventic Ustochrepts, --- --- thermic	deep --- --- ---	LSM 3-4	Prve-Juos	Topo-edaphic	0-15 Undiff.	9339	1.1	29
	Typic Ustifluvents, --- --- thermic	deep --- --- water table	LSM 3-4	Pofr2	Topo-edaphic				
20	Pachic Argiustolls, --- fine, mixed, mesic	deep --- sandy loam ---	LSM 4 +1	Bogr2/Jude2	Zoo-topo-edaphic	0-15	986	.1	31
22	Cumulic Haploborolls, --- --- ---	--- --- --- water table	LSC 5	Poan3	Topo-edaphic	0-15	1223	.1	33
26	Fluventic Ustochrepts, --- --- mesic	deep --- --- ---	LSM 5	Pipo	Topo-edaphic	0-15	7783	.9	35
73	Fluventic Ustochrepts, --- --- mesic	deep --- --- --- SANDY CLAY	LSM 4	Juos	Topo-edaphic	0-15	3097	.4	~~37~~ 37
1100	Ustochreptic Camborthids, --- loamy-skeletal, mixed, thermic	deep ext.gravelly sandy loam ---	LSM 2 0	Cemi2/Cegi/ Prve/Sich	Edaphic	15-40	1462	.2	39

HSG

D

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
1101 211	Ustochreptic Camborthids, --- loamy-skeletal, mixed, thermic	deep ext.gravelly sandy loam ---	LSM 2 0	Cemi2/Cegi/ Prve/Sich	Edaphic	40-80	6557	.8	41
1110 2	Ustochreptic Calciorthids, --- coarse-loamy, mixed, thermic	deep gravelly sandy loam ---	LSM 2 0	Cemi2/Cegi/ Prve/Caho3/ Ladi2	Topo-edaphic	0-15	1282	.2	43
1120	Ustalfic Haplargids, --- fine, mixed, thermic	deep gravelly loam dissected	LSM 2 0	Cemi2/Prve/ Sich	Topo-edaphic	0-15	2048	.2	45
1770	Lithic Camborthids, --- loamy-skeletal, mixed, thermic	shallow ext.cobbly sandy loam dissected	LSM 2 0	Cemi2/Cegi/ Prve/Sich Fosp2	Edaphic	0-40	14817	1.7	47
3050	Typic Haplustalfs, --- fine, mont., thermic	--- gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Hibe	Edaphic	0-15	8401	1.0	49
3060	Typic Haplustalfs, --- fine, mixed, thermic	deep gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	0-15	2734	.3	51
3124	Lithic Ustochrepts, --- loamy-skeletal, mixed, thermic	--- very cobbly sandy loam ---	LSM 3 +1	Prve/Beha/ Fosp2	Zeo-edaphic	15-40	14079	1.6	53
3187	Vertic Haplustalfs, --- fine, mont., thermic	deep --- clay loam ---	LSM 4 -1	Juos/Juer/ Prve/Hibe	Topo-edaphic	0-15	2900	.3	55
3230	Aridic Haplustalfs, --- fine-loamy, mixed, thermic	deep gravelly sandy loam ---	LSM 3 0	Prve/Beha/ Bohi2.Boer4	Edaphic	0-15	6098	.7	57

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
3231	Typic Haplustalfs, --- loamy-skeletal, mixed, thermic	--- v. gravelly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	15-40	23612	2.7	59
3236	Typic Haplustalfs, --- fine, mixed, thermic	deep cobbly loam ---	LSM 4 -1	Juos/Juer/ Prve/Hibe	Edaphic	15-40	6344	.7	61
3261	Typic Haplustalfs, --- loamy-skeletal, mixed, thermic	deep gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	15-40	7358	.8	63
3306	Aridic Haplustalfs, --- clayey-skeletal, mont., thermic	--- v.gravelly loam ---	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	0-15	5141	.6	65
3333	Typic Haplustalfs, --- loamy-skeletal, mixed, thermic	--- v. gravelly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	0-15	1622	.2	67
3334	Aridic Haplustalfs, --- loamy-skeletal, mixed, thermic	deep v. gravelly sandy loam ---	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	15-40	9154	1.0	69
3335	Aridic Haplustalfs, --- loamy-skeletal, mixed, thermic	deep v. gravelly sandy loam ---	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	40-80	2092	.2	71
3339	Typic Ustochrepts, --- loamy-skeletal, mixed, thermic	mod. deep v. cobbly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	40-80 Complex	30084	3.4	73
	Rock outcrop	---	---	---	---				

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
3350	Typic Ustochrepts, calcareous, loamy-skeletal, mixed, thermic	deep gravelly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	0-15	6075	.7	75
3351	Typic Ustochrepts, calcareous, loamy-skeletal, mixed, thermic	deep v. gravelly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	15-40	2130	.2	77
3352	Typic Ustochrepts, calcareous, loamy-skeletal, mixed, thermic	deep v. gravelly sandy loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	40-80	758	.1	79
3355	Typic Ustochrepts, calcareous, fine-loamy, mixed, mesic	deep gravelly loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5/ Caho3/Comes	Topo-fire-edaphic	0-15	3755	.4	81
3359	Typic Ustochrepts, calcareous, coarse-loamy, mixed, thermic	deep v. gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	15-40	1258	.1	83
3360	Typic Ustochrepts, calcareous, coarse-loamy, mixed, thermic	deep v. gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	40-80	2278	.3	85
3371	Typic Haplustalfs, --- fine-loamy, mixed, thermic	deep v. gravelly loam dissected	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	0-40	3655	.4	87
3469	Typic Haplustalfs, --- loamy-skeletal, mixed, thermic	--- v. gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	40-80	6987	.8	89

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name: Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
3520	Typic Haplustalfs, --- fine, mont., thermic	--- cobbly loam ---	LSM .4 -1	Juos/Juer/ Prve/Hibe	Edaphic	0-15	5569	.6	91
3521	Typic Haplustalfs, --- clayey-skeletal, mixed, thermic	deep cobbly clay loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	15-40	13061	1.5	93
3710	Typic Haplustalfs, --- fine, mont., mesic	deep gravelly loam ---	LSM 4 0	Pimo/Juos/ Hibe	Edaphic	0-15	13734	1.6	95
3711	Typic Haplustalfs, --- fine, mont., mesic	deep cobbly clay loam ---	LSM 4 0	Pimo/Juos/ Hibe	Edaphic	15-40	8908	1.0	97
3712	Typic Haplustalfs, --- clayey-skeletal,mont., mesic	deep very cobbly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	40-80	7832	.9	99
3730	Typic Haplustalfs, --- fine-loamy, mixed, mesic	deep gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	0-15	14207	1.6	101
3731	Typic Haplustalfs, --- fine-loamy, mixed, mesic	--- gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	15-40	15214	1.7	103
3732	Typic Haplustalfs, --- fine-loamy, mixed, mesic	--- v. gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	40-80	5916	.7	105
3752	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	mod. deep v. gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	15-40	14118	1.6	107

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
3753	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	40-80 Complex	9387	1.1	109
	Rock outcrop	---	---	---	---				
3760	Typic Haplustalfs, --- fine-loamy, mixed, thermic	deep gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	0-15	1263	.1	111
3761	Typic Haplustalfs, --- fine-loamy, mixed, thermic	--- gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	15-40	2294	.3	113
3770	Typic Ustochrepts, calcareous, loamy-skeletal, mixed, mesic	--- v. gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5/ Caho3	Edaphic	15-40 Association	6370	.7	115
	Typic Ustochrepts, calcareous, loamy-skeletal, mixed, thermic	--- v. gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2 Caho3	Edaphic	15-40			
3821	Typic Haplustalfs, --- clayey-skeletal, mixed, mesic	deep v. gravelly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	15-40	7483	.9	117
3822	Typic Haplustalfs, --- clayey-skeletal, mixed, mesic	--- very cobbly loam ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	40-80	2720	.3	119
4061	Typic Haplustalfs, --- fine, mont., mesic	deep v. gravelly loam ---	LSM 4 +1	Bogr2/Jude2/ Qutu2	Zootic	15-40	4423	.5	121

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page	HSG
4140	Typic Haplustalfs, --- fine, mont., mesic	deep gravelly loam ---	LSM 4 +1	Bogr2/Jude2	Zoo-topo-edaphic	0-15 Complex	17492	2.0	~~123~~ 135	
	Vertic Haplustalfs, --- fine, mont., mesic	deep gravelly clay loam	LSM 4 +1	Paob/Bogr2/Jude2	Zoo-topo-edapic					D
4161	Typic Haplustalfs, --- fine, mont., mesic	mod. deep very grav. loam ---	LSM 4 +1	Pimo/Jude2/Juos/Quar/Qutu2/Arpu5	Edaphic	15-40	4035	.5	125	
4170	Typic Haplustalfs, --- fine, mixed, mesic	--- gravelly loam ---	LSM 4 +1	Pimo/Jude2/Juos	Topo-edaphic	0-15	16747	1.9	~~127~~ 139	C
4175	Typic Haplustalfs, --- clayey-skeletal,mixed, mesic	--- very cobbly loam ---	LSM 4 +1	Pimo/Jude2/Juos/Quar/Qutu2/Arpu5	Edaphic	15-40	11704	1.3	~~129~~ 141	C
4176	Typic Haplustalfs, --- clayey-skeletal,mixed, mesic	--- ext. cobbly loam ---	LSM 4 +1	Pimo/Jude2/Juos/Quar/Qutu2/Arpu5	Edaphic	40-80	12499	1.4	131	
4240	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	deep gravelly sandy loam gullied	LSM 4 +1	Pimo/Jude2/Juos/Quar/Qutu2/Arpu5	Edaphic	0-15	6552	.8	~~133~~ 145	B
4241	Typic Haplustalfs, --- loamy-skeletal, mixed, mesic	--- gravelly sandy loam ---	LSM 4 +1	Quem/Jude2/Arpu5	Fire	15-40 Complex	10634	1.2	135	
	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 +1	Quem/Jude2/Arpu5	Fire					

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
4242	Lithic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 0	Quem/Qutu2/ Arpu5	Fire-edaphic	40-80 Complex	27219	3.1	137
	Typic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- v. gravelly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic				
4451	Typic Haplustalfs, --- fine,mixed, mesic	mod. deep very cobbly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	0-15	3784	.4	139
	Udic Haplustalfs, --- fine,mixed, mesic	mod. deep gravelly loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5 Arpr	Edaphic				
4457	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	mod. deep v. gravelly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	15-40 Complex	17551	2.0	~~147~~ 153
	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Arpu5	Edaphic				
4468	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire	15-40 Complex	4142	.5	143
	Typic Haplustalfs, --- clayey-skeletal, mixed, mesic	mod. deep gravelly loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire				

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
4469	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- gravelly loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire	40-80 Complex	15329	1.8	145
	Typic Haplustalfs, --- loamy-skeletal, mixed, mesic	--- gravelly loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire				
5074	Udic Haplustalfs, --- fine, mont., mesic	deep cobbly loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Bogr2	Edaphic	15-40 Association	4782	.6	147
	Typic Haplustalfs, --- fine, mont., mesic	deep cobbly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Bogr2	Edaphic				
75	Udic Haplustalfs, --- clayey-skeletal, mixed, mesic	deep very cobbly loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	15-80 Association	6773	.8	149
	Typic Haplustalfs, --- clayey-skeletal, mixed, mesic	deep very cobbly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar	Edaphic				
5078	Mollic Eutroboralfs, --- fine, mixed	deep --- loam ---	LSC 5 0	Pipo/Quga	Edaphic	0-15	9145	1.1	151
5079	Typic Eutroboralfs, --- clayey-skeletal, mixed	deep --- loam ---	LSC 5 0	Pipo/Quga	Edaphic	15-40	4003	.5	153
5080	Typic Eutroboralfs, --- clayey-skeletal, mixed	deep v. gravelly loam ---	LSC 5 0	Pipo/Quga	Edaphic	40-80	3890	.5	155

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Vegetation Class	Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
5103	Udic Ustochrepts, --- loamy-skeletal, mixed, mesic	deep gravelly loam ---	LSM 5 0	Quar/Qutu2/ Arpu5	Fire	40-80	8855	1.1	157
5161	Typic Eutroboralfs, --- fine, mixed	deep cobbly clay loam ---	LSC 5 0	Pipo/Quga	Edaphic	0-40 Complex	4446	.5	159
	Udic Ustochrepts, --- loamy-skeletal, mixed, frigid	--- v. gravelly sandy loam ---	LSC 5 0	Pipo/Quga	Edaphic				
5162	Typic Eutroboralfs, --- fine, mixed	deep cobbly clay loam ---	LSC 5 0	Pipo/Quga	Edaphic	15-80 Undiff.	15284	1.8	161
	Udic Ustochrepts, --- loamy-skeletal, mixed, frigid	--- v. gravelly sandy loam ---	LSC 5 0	Pipo/Quga	Edaphic				
	Typic Eutrochrepts, --- loamy-skeletal, mixed, frigid	deep cobbly loam ---	LSC 6 0	Abco/Psmeg/ Pipo	Edaphic				
5165	Udic Haplustalfs, --- fine-loamy, mixed, mesic	deep gravelly loam ---	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	0-15	2104	.2	163
5250	Udic Haplustalfs, --- fine, mixed, mesic	deep gravelly loam ---	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	0-15	15956	1.8	165
5251	Udic Haplustalfs, --- fine, mixed, mesic	deep gravelly loam ---	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	15-40	23529	2.7	167

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name: Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
5252	Udic Haplustalfs, --- fine, mixed, mesic	deep very cobbly ~~clay~~ loam ---	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	40-80	4988	.6	169
5350	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	0-15	3037	.4	~~171~~ 169
5351	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	15-40	3604	.4	173
5352	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	40-80	15476	1.8	175
5368	Udic Ustochrepts, calcareous, loamy-skeletal,mixed, mesic	deep gravelly loam ---	LSM 5 0	Pipo/Jude2/ Quar/Arpu5 Comes	Edaphic	15-40	8471	1.0	177
5452	Udic Haplustalfs, --- loamy-skeletal,mixed, mesic	deep gravelly loam ---	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	40-80	5063	.6	179
5471	Typic Haplustalfs, --- fine, mixed, mesic	deep ext. cobbly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	15-40 Association	10756	1.2	181
	Udic Haplustalfs, --- fine, mixed, mesic	deep very cobbly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic				
5550	Udic Haplustalfs, --- fine, mont., mesic	deep gravelly loam ---	LSM 5 0	Pipo/Jude2/ Quar	Edaphic	0-15	9307	1.1	183

HSG

Does not match mud

B

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name: Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
5551	Udic Haplustalfs, --- fine, mont., mesic	deep gravelly loam ---	LSM 5 0	Pipo/Jude2/ Quar	Edaphic	15-40	4428	.5	185
5650	Udic Haplustalfs, --- fine, mixed, mesic	deep gravelly loam ---	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	0-15	9673	1.1	187
5651	Udic Haplustalfs, --- clayey-skeletal, mixed, mesic	deep cobbly loam ---	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	15-40	10506	1.2	189
6250	Glossoboric Hapludalfs. --- fine, mixed, mesic	deep --- loam ---	LSM 6 -1 ---	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	0-15	2884	.3	191
6251	Glossoboric Hapludalfs. --- fine, mixed, mesic	deep gravelly loam ---	LSM 6 -1 ---	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	15-40	13505	1.6	193
6252	Glossoboric Hapludalfs. --- fine, mixed, mesic	deep cobbly loam ---	LSM 6 -1 ---	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	40-80	1455	.2	195
6368	Glossoboric Hapludalfs. --- loamy-skeletal, mixed, mesic	deep gravelly loam ---	LSM 6 -1 ---	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	40-80 Complex	6250	.7	197
	Typic Eutrochrepts, calcareous, loamy-skeletal, mixed, mesic	deep gravelly loam ---	LSM 6 -1 ---	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic				

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
6405	Rock outcrop	---	---	---	---	40-120 Association	20278	2.3	199
	Typic Udorthents, --- sandy-skeletal, mixed, frigid	--- gravelly sandy loam ---	LSC 6 0	Abco/Psmeg/ Pipo/Pist2/ Quga	Edaphic				
	Typic Udorthents, --- sandy-skeletal, mixed, mesic	--- gravelly sandy loam ---	LSM 6 -1	Psmeq/Pipo/ Jude2/Quar/ Arpr	Edaphic				
	Typic Ustorthents, --- sandy-skeletal, mixed, mesic	--- gravelly sandy loam ---	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic				
6652	Typic Eutrochrepts, --- loamy-skeletal, mixed, mesic	deep gravelly sandy loam ---	LSM 6 -1	Psmeq/Pipo/ Jude2/Quar/ Arpr	Edaphic	40-120	8038	.9	201
7606	Aridic Haplustalfs, --- --- thermic	--- --- --- ---	LSM 3 0	Prve	Zootic	0-15	1625	.2	203
8356	Typic Ustochrepts, --- --- mesic	--- --- --- ---	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5/ Caho3	Edaphic	15-80 Complex	8423	1.0	205
	Badlands	---	---	---	---				
9175	Typic Haplustalfs, --- --- mesic	--- --- --- ---	LSM 4-5	Quem/Cemo2	Fire-edaphic	40-120 Complex	4570	.5	207
	Rock outcrop	---	---	---	---				

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
9239	Torriorthents	---	LSM	Cemi2	Edaphic	40-120	40731	4.7	209
	---	---	2			Undiff.			
	---	---							
	---	---							
	Ustorthents	---	LSM	Prve	Edaphic				
	---	---	3						
	---	---							
	---	---							
	Ustochrepts	---	LSM	Prve	Edaphic				
	---	---	3						
	---	---							
	---	---							
	Rock outcrop	---	---	---	---				
9349	Haplustalfs,	---	LSM	Juos	Edaphic	40-120	84391	9.7	211
	---	---	4			Undiff.			
	---	---							
	---	---							
	Ustochrepts,	---	LSM	Juos	Edaphic				
	---	---	4						
	---	---							
	---	---							
	Ustorthents,	---	LSM	Juos	Edaphic				
	---	---	4						
	---	---							
	---	---							
	Rock outcrop	---	---	---	---				
9459	Typic Ustochrepts,	---	LSM	Pimo/Jude2/	Edaphic	40-120	18102	2.1	213
	---	---	4	Juos/Quar/		Association			
	---	---	+1	Qutu2/Arpu5					
	mesic	---							
	Udic Ustochrepts,	---	LSM	Pipo/Jude2/	Edaphic				
	---	---	5	Quar/Arpu5/					
	---	---	0	ARPR					
	mesic	---							
	Rock outcrop	---	---	---	---				

94 Map Units

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/04/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 9 - Typic Torrifluvents, LSM, 2, thermic, deep, loamy sand, water table: Prve, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping valley plains. Mean annual precipitation ranges from 22 to 35 centimeters; mean annual air temperature ranges from 20 to 22 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). The freeze free period range from 250 to 290 days. Elevations range from 600 to 1000 meters. Delineations are irregular in shape and vary in size from 15 to 900 hectares. Intermittent streams are present within the map unit. Sheet, rill and gully erosion is conspicuous along drainages. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Torrifluvents, — — thermic	deep — loamy sand water table	LSM 2	Prve	Topo-edaphic	--- cm / 700 m / — deg.C / — deg.C	Valley plains; complex slopes of widely varying length on an average gradient of 4 percent; parent material is alluvium.	90
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Riverwash	—	—	—	—	— cm / m / deg.C / deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Torrifluvents, LSM, 2, thermic, deep, loamy sand

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	—	6.7	—	—
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.17	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 9
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	—			
Forage	—			
Forage (maximum)	—			
Timber	Site Index			
	—			
Fuelwood	cd/ac			
	—			
Potential for:	Rating			
Revegetation	—			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
Wildlife Habitat Suit:				
Mule Deer	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	—			
Unsurfaced Roads	—			
Trails	—			
Campgrounds	—			
Wheeled O.R.V.	—			
Management Problems:				
Erosion(Sheet & Rill)	—			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Celtis reticulata	Cere2	—			
Cercidium floridum	Cefl2	—			
Cercidium microphyllum	Cemi2	—			
Prosopis velutina	Prve	—			
Shrubs:					
Acacia greggii	Acgr	—			
Baccharis sarathroides	Basa2	—			
Celtis pallida	Cepa5	—			
Lycium pallidum	Lyph	—			
Forbs:					
Gutierrezia sarothrae	Gusa2	—			
Haplopappus	HAPLO2	—			
Graminoids:					
Bouteloua curtipendula	Bocu2	—			

6.0 Mangement Implications:

6.1 —

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/04/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 15 - Fluventic Ustochrepts, LSM, 3-4, thermic, deep, well drained: Prve-Juos - Typic Ustifluvents, LSM, 3-4, thermic, deep, water table: Pofr2, undifferentiated group, 0-15% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in a random pattern on valley plains. Mean annual precipitation ranges from 35 to 50 centimeters; mean annual air temperature ranges from 15 to 19 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). The freeze free period range from 210 to 240 days. Elevations range from 700 to 1200 meters. Delineations are irregular in shape and vary in size from 15 to 900 hectares. Localized intermittent and perennial streams are present within the map unit. Sheet, rill and gully erosion is conspicuous along drainages. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Com. %
2.1 Fluv. Ustochrepts, — — thermic	deep — — well drained	LSM 3-4	Prve-Juos	Topo-edaphic	--- — — — / — / deg.C / deg.C	Valley plains; complex slopes of widely varying length on an average gradient of 4 percent; parent material is alluvium.	50
2.2 Typic Ustifluvents, — — thermic	deep — — water table	LSM 3-4	Pofr2	Topo-Edaphic	— — — / — / deg.C / deg.C	Valley plains; complex slopes of widely varying length on an average gradient of 4 percent; parent material is alluvium.	40
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Riverwash	—	—	—	—	— / cm / m / deg.C / deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Fluventic Ustochrepts, LSM, 3-4, deep

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover 0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Typic Ustifluvents, LSM, 3-4, deep

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover —	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 15
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—			
Forage	—			
Forage (maximum)	—			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	—			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
Wildlife Habitat Suit:				
Mule Deer	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	—			
Unsurfaced Roads	—			
Trails	—			
Campgrounds	—			
Wheeled O.R.V.	—			
Management Problems:				
Erosion(Sheet & Rill)	—			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Celtis reticulata	Cere2	—			
Juniperus erythrocarpa	Juer	—			
Juniperus monosperma	Jumo	—			
Juniperus osteosperma	Juos	—			
Platanus wrightii	Plwr2	—			
Populus fremontii	Pofr2	—			
Prosopis velutina	Prve	—			
Shrubs:					
Acacia greggii	Acgr	—			
Baccharis sarathroides	Basa2	—			
Berberis haematocarpa	Beha	—			
Condalia spathulata	Cosp3	—			
Datura meteloides	Dame2	—			
Quercus turbinella	Qutu2	—			
Rhamnus crocea illicifolia	Rhcri	—			
Rhus trilobata	Rhtr	—			
Forbs:					
Gutierrezia sarothrae	Gusa2	—			
Graminoids:					
Bouteloua curtipendula	Bocu2	—			

6.0 Management Implications:

6.1 —

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/04/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 20 - Pachic Argiustolls, LSM, 4, +1, fine, mixed, mesic, deep, sandy loam: Bogr2/Jude2, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping to undulating valley plains in a localized area around Young, Arizona. Climatic data is taken from a NOAA weather station on location. Mean annual precipitation is 49 centimeters; mean annual air temperature is 11 Celsius. Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1700 meters. Delineations are irregular in shape and vary in size from 15 to 100 hectares. Intermittent streams are present within the map unit. Sheet, rill and gully erosion is localized along drainages. This map unit is characterized by a dendritic drainage pattern. Some localized areas show evidence of farming in the past.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Pachic Argiustolls, — fine, mixed mesic	deep — sandy loam —	LSM 4 +1	Bogr2/Jude2	Topo-zoo-edaphic	49 1550 10 19	cm m deg.C deg.C	Valley plains; complex slopes with an average length of 20 meters and an average gradient of 5 percent; parent material is alluvium.	90
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5 Riverwash	—	—	—	—	—	cm m deg.C deg.C	—	10
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Pachic Argiustolls, LSM, 4, +1, fine, mixed, mesic, deep, sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-75	c	44	0	25	75	60-70	35	25	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	7.5	6.7	2.3	2.6
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.24	0	5	30	30

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	3	>2mm 30	BA 25	5	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 20
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	750			
Forage	600			
Forage (maximum)	2000			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Fair			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Black Bear	Used			
Turkey	Used			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Moderate			
	Too wet			
Wheeled O.R.V.	Severe			
	Too wet			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	2			
Juniperus scopolorum	Jusc	T			
Pinus monophylla	Pimo	1			
Shrubs:					
Baccharis pteronioides	Bapt2	5			
Mimosa biuncifera	Mibi3	1			
Forbs:					
Eriogonum	ERIOG	2			
Psoralia tenuiflora	Pste3	10			
Graminoids:					
Agropyron smithii	Agsm	.10			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	2			
Bouteloua gracilis	Bogr2	3			
Bouteloua hirsuta	Bohi2	1			
Dactylion	DACTY	1			
Leptochloa dubia	Ledu	.50			
Lycurus phleoides	Lyph	.10			
Muhlenbergia longiligula	Mulo	.10			
Panicum obtusum	Paob	.50			
Poa fendleriana	Pofe	.50			
Sitanion hystrix	Sihy	2			

6.0 Mangement Implications:

6.1 These soils have high revegetation potential as long as the topsoil remains in place and organic matter remains high.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/04/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 22 - Cumulic Haploborolls, LSC, 5, water table: Poan3, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs along drainages on valley plains. Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 7 to 9 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (LSC). Patchy snow cover normally exists on this map unit from November to March. This map unit has a mean annual snowfall of 100 centimeters and a mean annual snow accumulation of 20 centimeters. The freeze free period is 120 days. Elevations range from 1900 to 2200 meters. Delineations are elongated in shape and vary in size from 10 to 100 hectares. Intermittent streams are present within the map unit. Sheet, rill and gully erosion is conspicuous along drainages. This map unit is characterized by dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Cumulic Haploborolls	---	LSC	Poan3	Topo-	--- cm	Valley plains; complex slopes of widely varying	90
—	—	5		edaphic	2000 m	length on an average gradient of 5 percent;	
—	—				— deg.C	parent material is alluvium.	
—	water table				— deg.C		
2.2					cm		
					m		
					deg.C		
					deg.C		
2.3					cm		
					m		
					deg.C		
					deg.C		
2.4					cm		
					m		
					deg.C		
					deg.C		
2.5 Riverwash	—	—	—	—	— cm	—	10
					m		
					deg.C		
					deg.C		
2.6					cm		
					m		
					deg.C		
					deg.C		

3.0 Estimated Soil Properties.

3.1 Cumulic Haploborolls, LSC, 5.

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	—	—	—	—
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	—	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 22
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—			
Forage	—			
Forage (maximum)	—			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	High			
Reforestation	High			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Black bear	Used			
Elk	Used			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	—			
Unsurfaced Roads	—			
Trails	—			
Campgrounds	—			
Wheeled O.R.V.	—			
Management Problems:				
Erosion(Sheet & Rill)	—			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juglans major	Juma	—			
Pinus ponderosa	Pipo	—			
Populus angustifolia	Poan3	—			
Pseudotsuga menziessii gl.	Psmeg	—			
Quercus gambelii	Ouga	—			
Shrubs:					
Robinia neomexicana	Rone	—			
Vitis arizonica	Viar	—			
Forbs:					
Achillia millifolium lan.	Achmil	—			
Carex	CAREX	—			
Eriogonum	ERIOG	—			
Verbascum thapsis	Veth	—			
Graminoids:					
Bouteloua curtipendula	Bocu2	—			
Leptochloa dubia	Ledu	—			
Muhlenbergia longiligula	Mulo	—			
Muhlenbergia montana	Mumo	—			
Poa fendleriana	Pofe	—			
Sitanion hystrix	Sihy	—			

6.0 Mangement Implications:

6.1 —

6.2

6.3

6.4

Notes:

#26

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

No Pipo on map

1.0 Date: 9/04/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 26 - Fluventic Ustochrepts, LSM, 5, mesic, deep: Pipo, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on valley plains. Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 9 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1700 to 2100 meters. Delineations are elongated in shape and vary in size from 15 to 900 hectares. Intermittent streams are present within the map unit. Sheet, rill and gully erosion is conspicuous along drainages. This map unit is characterized by dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Fluv. Ustochrepts, — — mesic	deep — —	LSM 5	Pipo	Topo-edaphic	64 / 1800 / 10 / 14	Valley plains; complex slopes of widely varying length on an average gradient of 5 percent; parent material is alluvium.	90
2.2							
2.3							
2.4							
2.5 Riverwash	—	—	—	—	—	—	10
2.6							

3.0 Estimated Soil Properties.

3.1 Fluventic Ustochrepts, LSM, 5, mesic, deep.

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 26
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—			
Forage	—			
Forage (maximum)	—			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	—			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Black bear	Used			
Elk	Used			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	—			
Unsurfaced Roads	—			
Trails	—			
Campgrounds	—			
Wheeled O.R.V.	—			
Management Problems:				
Erosion(Sheet & Rill)	—			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juglans major	Jumaj	—			
Juniperus deppeana	Jude2	—			
Populus angustifolia	Poan3	—			
Quercus arizonica	Quar	—			
Quercus emoryii	Quem	—			
Shrubs:					
Arctostaphylos pringelii	Arpr	—			
Ceanothus fendlerii	Cefe	—			
Robinia neomexicana	Rone	—			
Vitis arizonica	Viar	—			
Forbs:					
Achillia millifolium lan.	Achmil	—			
Carex	CAREX	—			
Eriogonum	ERIOG	—			
Verbascum thapsis	Veth	—			
Graminoids:					
Bouteloua curtipendula	Bocu2	—			
Bouteloua gracilis	Bogr2	—			
Muhlenbergia longiligula	Mulo	—			
Muhlenbergia montana	Mumo	—			
Poa fendleriana	Pofe	—			
Sitanion hystrix	Sihy	—			

6.0 Mangement Implications:

6.1 —

6.2

6.3

6.4

Notes:

#73

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/04/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 73 - Fluventic Ustochrepts, LSM, 4, mesic, deep; Juos, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on valley plains. Mean annual precipitation ranges from 50 to 60 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period ranges from 190 to 200 days. Elevations range from 900 to 1400 meters on all aspects. Delineations are elongated in shape and vary in size from 15 to 900 hectares. Intermittent streams are present within the map unit. Sheet, rill and gully erosion is conspicuous along drainages. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Fluv. Ustochrepts, — — mesic	deep — — —	LSM	Juos	Topo-edaphic	--- — — — cm m deg.C deg.C	Valley plains; complex slopes of widely varying length on an average gradient of 5 percent; parent material is alluvium.	90
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Riverwash	—	—	—	—	— cm m deg.C deg.C	—	10
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Fluventic Ustochrepts, LSM, 4, mesic, deep.

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover 0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 73
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—			
Forage	—			
Forage (maximum)	—			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	—			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
Wildlife Habitat Suit:				
Mule Deer	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	—			
Unsurfaced Roads	—			
Trails	—			
Campgrounds	—			
Wheeled O.R.V.	—			
Management Problems:				
Erosion(Sheet & Rill)	—			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Cupressus glabra	Cugl	—			
Juniperus deppeana	Jude2	—			
Juniperus osteosperma	Juos	—			
Juniperus scopolorum	Jusc	—			
Pinus monophylla	Pimo	—			
Platanus wrightii	Plwr2	—			
Populus fremontii	Pofr2	—			
Quercus arizonica	Quar	—			
Quercus emoryii	Quem	—			
Shrubs:					
Arctostaphylos pungens	Arpu5	—			
Garrya wrightii	Gawr2	—			
Quercus turbinella	Qutu2	—			
Forbs:					
Eriogonum	ERIOG	—			
Gutierrezia sarothrae	Gusa2	—			
Graminoids:					
Bouteloua curtipendula	Bocu2	—			
Bouteloua hirsuta	Bohi2	—			
Lycurus phleoides	Lyph	—			
Sitanion hystrix	Sihy	—			

6.0 Management Implications:

6.1 —

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 09/05/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 1100 - Ustochreptic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, deep, extremely gravelly sandy loam: Cam12/Ceg1/Prve/Sich, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on hilly to steep complex hills bounded by sharply ascending mountain slopes. Mean annual precipitation ranges from 26 to 30 centimeters; mean annual air temperature ranges from 20 to 21 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 260 days. Elevations range from 500 to 700 meters on all aspects. Delineations are irregular in shape and vary in size from 40 to 200 hectares. Ephemeral streams are present within the mapping unit. Sheet, rill and gully erosion is conspicuous near stream beds. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Ustoch.Camborthids, — loamy-skel., mixed, thermic	deep ext.grav. sandy loam —	LSM 2 0	Cam12/Ceg1/ Prve/Sich	Edaphic	28 / 600 / 20 / 23	Hills; complex slopes, averaging 15 meters in length and a gradient of 30 percent; parent material is old alluvium from decomposed granite	85
2.2							
2.3							
2.4							
2.5 Ustalfic Haplargids, — loamy-skeletal, mixed, thermic	— — — —	LSM 2 0	Cam12/Ceg1/ Prve/Sich	Edaphic	28 / 600 / 20 / 23	Hills; complex slopes, averaging 15 meters in length and 30 percent grades; parent material is old alluvium from mixed sources.	15
2.6							

3.0 Estimated Soil Properties.

3.1 Ustochreptic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, deep, extremely gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-97	grvscl	24	0	70	30	10-15	25	10	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	10	6.7	6.4	6.4
											—	—	.05	% Veg. Ground Cover 0	10	10	10

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.1	80	5	5	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 1100
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	200			
Forage	100			
Forage (maximum)	150			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too dry			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Cactus Wren	Essential			
Gila Woodpecker	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Cercidium floridum	Cefl2	A			
Cercidium microphyllum	Cem12	4			
Cereus giganteus	Cegi	1			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis sarathroides	Basa2	A			
Berberis haematocarpa	Beha	A			
Calliandra eriophylla	Caer	1			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	1			
Celtis pallida	Cepa5	2			
Fouquieria splendens	Fosp2	T			
Krameria parvifolia gland.	Krpag	1			
Larrea divaricata	Lad12	T			
Lycium pallidum	Lypa	1			
Opuntia bigelovia	Opbi	T			
Opuntia engelmannii	Open2	1			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Simmondsia chinensis	Sich	5			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Encelia farinosa	Enfa	T			
Ephedra	EPHED	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	A			
Bouteloua hirsuta	Bohi2	A			
Eragrostis intermedia	Erin	1			
Hilaria belangeri	Hibe	A			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	A			
Muhlenbergia porteri	Mupo	7			
Panicum obtusum	Paob	A			
Trichachne californica	Trca2	T			
Tridens muticus	Trmu	2			

6.0 Management Implications:

6.1 Range conditions and microclimate favor winter grazing. This map unit has significant Jojoba production in undisturbed areas.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 09/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 1101 - Ustochreptic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, deep, extremely gravelly sandy loam: Cem12/Cegl/Prve/Sich, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep to very steep complex hills bounded by sharply ascending mountain slopes. Mean annual precipitation ranges from 26 to 30 centimeters; mean annual air temperature ranges from 20 to 21 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 260 days. Elevations range from 500 to 700 meters on all aspects. Delineations are irregular in shape and vary in size from 20 to 800 hectares. Ephemeral streams are present within the mapping unit. Sheet, rill and gully erosion is conspicuous near stream beds. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MF / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Ustoch.Camborthids, — loamy-skel., mixed, thermic	deep ext.grav. sandy loam —	LSM 2 0	Cem12/Cegl/ Prve/Sich	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Hills; complex slopes, averaging 10 meters in length and a gradient of 50 percent; parent material is old alluvium from decomposed granite	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Ustoch.Calciorthids, — loamy-skeletal, mixed, thermic	— — — —	LSM 2 0	Cem12/Cegl/ Prve/Caho3 Lad12	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Hills; complex slopes, averaging 10 meters in length and 50 percent grades; parent material is calcareous old alluvium.	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Ustochreptic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, deep, extremely gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	Pass. Sieve No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	chvl	19	40	60	40	25-30	20	10	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	18.3	6.7	11.6	11.6
											—	—	.05	% Veg. Ground Cover 0	25	10	10

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.1	70	10	0	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	Pass. Sieve No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	Pass. Sieve No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	Pass. Sieve No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 1101
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	200			
Forage	100			
Forage (maximum)	150			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	—			
Potential for:		Rating		
Revegetation	Low			
	Too dry			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Cactus wren	Essential			
Gila woodpecker	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Cercidium floridum	Cefl2	A			
Cercidium microphyllum	Cemi2	4			
Cereus giganteus	Cegi	1			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis sarothroides	Basa2	A			
Berberis haematocarpa	Beha	A			
Calliandra eriophylla	Caer	1			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	1			
Celtis pallida	Cepa5	2			
Fouquieria splendens	Fosp2	T			
Krameria parvifolia gland.	Krpag	1			
Larrea divaricata	Ladi2	T			
Lycium pallidum	Lypa	1			
Opuntia bigelovia	Opbi	T			
Opuntia engelmannii	Open2	1			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Simmondsia chinensis	Sich	5			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Encelia farinosa	Enfa	T			
Ephedra	EPHED	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Aristida	ARIST	50			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	A			
Bouteloua hirsuta	Bohi2	A			
Eragrostis intermedia	Erin	1			
Hilaria belangeri	Hibe	A			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	A			
Muhlenbergia porteri	Mupo	7			
Panicum obtusum	Paob	A			
Trichachne californica	Trca2	T			
Tridens muticus	Trmu	2			

6.0 Management Implications:

6.1 Range conditions and microclimate favor winter grazing on slopes under 50 percent. This map unit has significant Jojoba production on undisturbed sites.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 09/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 1110 - Ustochreptic Calciorthids, LSM, 2, 0, coarse-loamy, mixed, thermic, deep, gravelly sandy loam: Cem12/Cegi/Prve/Caho3/Lad12, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on nearly level to gently sloping elevated plains bounded by hill slopes. Mean annual precipitation ranges from 26 to 30 centimeters; mean annual air temperature ranges from 20 to 21 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 260 days. Elevations range from 500 to 700 meters on all aspects. Delineations are irregular in shape and vary in size from 20 to 200 hectares. Ephemeral streams are present within the mapping unit. Sheet, rill and gully erosion is conspicuous near stream beds. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / MAT m / NFF deg.C / NSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Ustoch.Calciorthids, --- loamy-skel., mixed, thermic	deep gravelly sandy loam ---	LSM 2 0	Cem12/Cegi/ Prve/Caho3/ Lad12	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Elevated plains; simple concaved slopes with an average length of 15 meters and gradient of 5 percent; parent material is calcareous old alluvium and valley fill.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Ustochreptic Calciorthids, LSM, 2, 0, coarse-loamy, mixed, thermic, deep, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	sl	10	5	20	80	25-30	15	10	GP	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	2.0	6.7	1.3	1.3
											---	---	.15	% Veg. Ground Cover 0	0	10	10

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	---	20	10	0	70

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 1110
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	200			
Forage	50			
Forage (maximum)	100			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too dry			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Good			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Cactus wren	Essential			
Gila woodpecker	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Slight			
Trails	Slight			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Cercidium floridum	Cefl2	A			
Cercidium microphyllum	Cemi2	4			
Cereus giganteus	Cegi	1			
Shrubs:					
Acacia constricta	Acco2	1			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis sarathroides	Basa2	A			
Berberis haematocarpa	Beha	A			
Calliandra eriophylla	Caer	1			
Canotia holacantha	Caho3	5			
Ceanothus greggii	Cegr	1			
Celtis pallida	Cepa5	1			
Foqueria splendens	Fosp2	T			
Krameria parvifolia gland.	Krpag	T			
Larrea divaricata	Ladi2	5			
Lycium pallidum	Lypa	T			
Opuntia bigelovia	Opbi	T			
Opuntia engelmannii	Open2	1			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Simmondsia chinensis	Sich	3			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Encelia farinosa	Enfa	T			
Ephedra	EPHED	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	A			
Bouteloua hirsuta	Bohi2	A			
Eragrostis intermedia	Erin	1			
Hilaria belangeri	Hibe	A			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	A			
Muhlenbergia porteri	Mupo	4			
Panicum obtusum	Paob	A			
Trichachne californica	Trca2	T			
Tridens muticus	Trmu	T			

6.0 Mangement Implications:

6.1 Calcium carbonate content reduces normal vegetative production by about 40 percent. Microclimate limits remaining production to cool season.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 1120 - Ustalfic Haplargids, LSM, 2, 0, fine, mixed, thermic, deep, gravelly loam; dissected: Cem12/Prve/Sich, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on nearly level to hilly complex, elevated plains, which are frequently downcut. Mean annual precipitation ranges from 26 to 30 centimeters; mean annual air temperature ranges from 20 to 21 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 260 days. Elevations range from 500 to 700 meters on all aspects. Delineations are irregular in shape and vary in size from 20 to 900 hectares. Intermittent streams are present within the mapping unit. Gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Ustalfic Haplargids, — fine, mixed, thermic	deep gravelly loam dissected	LSM 2 0	Cem12/Prve/Sich	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Elevated plains; complex concaved slopes with an average length of 15 meters and gradient of 10 percent; parent material is old alluvium from mixed sources.	75
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Ustalfic Haplargids, — fine-loamy, mixed, thermic	deep — — dissected	LSM 2 0	Cem12/Cegl/Prve/Sich	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Elevated plains; complex concaved slopes with an average length of 15 meters and gradient of 8 percent; parent material is old alluvium from mixed sources.	15
2.1 Ustalfic Haplargids, — loamy-skel., mixed, thermic	deep — — dissected	LSM 2 0	Cem12/Prve/Prve/Sich	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Elevated plains; complex concaved slopes with an average length of 15 meters and gradient of 8 percent; parent material is old alluvium from mixed sources.	10

3.0 Estimated Soil Properties.

3.1 Ustalfic Haplargids, LSM, 2, 0, fine, mixed, thermic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	cbc	40	30	15	85	70-80	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	6.9	6.7	4.4	4.4
											—	—	.20	% Veg. Ground Cover 0	5	10	10

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.10	15	5	5	75

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 1120
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	200			
Forage	100			
Forage (maximum)	150			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too dry			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Cactus wren	Essential			
Gila woodpecker	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Cercidium floridum	Cefl2	A			
Cercidium microphyllum	Cemi2	4			
Cereus giganteus	Cegi	T			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis sarathroides	Basa2	A			
Berberis haematocarpa	Beha	A			
Calliandra eriophylla	Caer	1			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	1			
Celtis pallida	Cepa5	1			
Fouquieria splendens	Fosp2	A			
Krameria parvifolia gland.	Krpag	1			
Larrea divaricata	Ladi2	T			
Lycium pallidum	Lypa	1			
Opuntia bigelovia	Opbi	A			
Opuntia engelmannii	Open2	1			
Opuntia spinosior	Opsp	1.50			
Prosopis velutina	Prve	4			
Simmondsia chinensis	Sich	2			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Encelia farinosa	Enfa	T			
Ephedra	EPHED	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	A			
Bouteloua hirsuta	Boh12	A			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	A			
Muhlenbergia porteri	Mupo	7			
Panicum obtusum	Paob	T			
Trichachne californica	Trca2	T			
Tridens muticus	Trmu	T			

6.0 Management Implications:

6.1 Clay soils limit growth of saguaro and jojoba, as well as certain forage species. Microclimate limits remaining production to cool season.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 1770 - Lithic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, shallow, extremely cobbly sandy loam; dissected: Cem12/Cegl/Prve/Sich/Fosp2, 0-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on undulating to steep, complex, dissected, elevated plains and hills, bounded by sharply ascending mountains, canyons and escarpments. Mean annual precipitation ranges from 26 to 30 centimeters; mean annual air temperature ranges from 20 to 21 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 260 days. Elevations range from 500 to 700 meters on all aspects. Delineations are irregular in shape and vary in size from 40 to 800 hectares. Intermittent streams are present within the mapping unit. Sheet, rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Lithic Camborthids, — loamy-skel., mixed, thermic	shallow ext.cobbly sandy loam dissected	LSM 2 0	Cem12/Cegl/ Prve/Sich/ Fosp2	Edaphic	28 cm / 600 m / 20 deg.C / 23 deg.C	Plains and hills; dissected complex slopes, with an average length of 15 meters and gradient of 20 percent; parent material is derived from mixed sources.	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Lithic Camborthids, LSM, 2, 0, loamy-skeletal, mixed, thermic, shallow, extremely cobbly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell
0-38	grvsl	17	5	55	45	10-20	20	15	GM	Low

Soil Wetness Depth	Durat.	Months
—	—	—

Bedrock Hard.	Kind	Factor K
—	—	.05

Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
Rate - t/ha/yr			
5.1	6.7	5.0	3.3
% Veg. Ground Cover			
0	0	5	10

Management Implications: —

Erosion Class Water	Wind	Organic Matter %
—	—	—

% Cur. Surface Comp. RF	Veg.	Lit.	Soil
>2mm	BA		
80	5	0	15

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months

Bedrock Hard.	Kind	Factor K

Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
Rate - t/ha/yr			
% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %

% Cur. Surface Comp. RF	Veg.	Lit.	Soil
>2mm	BA		

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months

Bedrock Hard.	Kind	Factor K

Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
Rate - t/ha/yr			
% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %

% Cur. Surface Comp. RF	Veg.	Lit.	Soil
>2mm	BA		

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months

Bedrock Hard.	Kind	Factor K

Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
Rate - t/ha/yr			
% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %

% Cur. Surface Comp. RF	Veg.	Lit.	Soil
>2mm	BA		

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 1770
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	150			
Forage	50			
Forage (maximum)	50			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too dry			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Cactus Wren	Essential			
Gila Woodpecker	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Gully	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Cercidium floridum	Cefl2	A			
Cercidium microphyllum	Cemi2	5			
Carnegiea gigantea	Cegi	2			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis sarothroides	Basa2	A			
Berberis haematocarpa	Beha	A			
Calliandra eriophylla	Caer	1			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	T			
Celtis pallida	Capa5	T			
Fouquieria splendens	Fosp2	5			
Krameria parvifolia gland.	Krpag	1			
Larrea divaricata	Ladi2	T			
Lycium pallidum	Lypa	T			
Opuntia bigelovia	Opbi	2			
Opuntia engelmannii	Open2	2			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Simmondsia chinensis	Sich	2			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Encelia farinosa	Enfa	1			
Ephedra	EPHED	T			
Gutierrezia sarothrae	Gusa2	50			
Haplopappus	HAPLO2	50			
Graminoids:					
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	A			
Bouteloua hirsuta	Bohi2	A			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	A			
Hilaria mutica	Himu2	A			
Lycurus phleoides	Lyph	A			
Muhlenbergia porteri	Mupo	3			
Panicum obtusum	Paob	A			
Trichachne californica	Trca2	T			
Tridens muticus	Trmu	T			

6.0 Management Implications:

6.1 Rock content limits management potential. Primary emphasis should be to retard downcutting where feasable.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3050 - Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, gravelly loam: Juos/Juer/Prve, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 900 hectares. Sheet and rill erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, fine, mont., thermic	--- gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve	Edaphic	48 cm 1400 m 15 deg.C 18 deg.C	Elevated plains; simple concaved slopes averaging 30 meters in length and 10 percent grades; parent material is old alluvium from mixed sources.	100
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5					cm m deg.C deg.C		
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
20-70	c	45	5	15	85	70-80	50	25	CH	High	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	15.6	6.7	6.7	6.7
											---	---	.20	% Veg. Ground Cover 0		20	35

Management Implications: These soils can be converted to vertisols under conditions of extended erosion; once started, this would be an nearly irreversable process which adversely affects soil productivity.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	.8	20	15	5	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3050
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Juniper	1			
Potential for:	Rating			
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Severe			
	Too clayey			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	T			
Berberis haematocarpa	Beha	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleri	Dawh2	T			
Krameria parvifolia	Krpa	T			
Mimosa biuncifera	Mibi3	T			
Nolina microcarpa	Nomi	3			
Opuntia engelmanii	Open2	T			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Yucca schottii	Yusc	T			
Forbs:					
Astralagus	ASTRA	T			
Eriogonum	ERIOG	T			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	1			
Haplopappus	HAPLO2	T			
Helianthus annuus	Hean3	1			
Graminoids:					
Andropogon barbinodis	Anba	1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	15			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	T			

6.0 Management Implications:

6.1 These soils have a very high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and localized rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3060 - Typic Haplustalfs, LSM, 4, -1, fine, mixed, thermic, deep, gravelly loam: Juos/Juer/Prve/Qutu2, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 800 hectares. This map unit is characterized by a dendritic drainage pattern. Ephemeral streams are present within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	cm m deg.C deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, —— fine, mixed, thermic	deep gravelly loam ——	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 1400 15 18	 m deg.C deg.C	Elevated plains; simple slopes averaging 20 meters in length and 10 percent grades; parent material is from mixed sources.	100
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5						cm m deg.C deg.C		
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine, mixed, thermic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
13-63	cl	37	0	10	90	65-70	30	15	CL	Mod.	——	——	——	Rate - t/ha/yr			
											Bedrock		Factor	12.7	6.7	5.5	5.5
											Hard.	Kind	K	% Veg. Ground Cover			
											——	——	.20	0	15	20	20

Management Implications: ——

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
——	——	.8	30	15	5	50

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3060
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:						
	Juniperus erythrocarpa	Juer	5			
	Juniperus monosperma	Jumo	T			
	Juniperus osteosperma	Juos	5			
Shrubs:						
	Acacia greggii	Acgr	T			
	Agave	AGAVE	T			
	Baccharis pteronioides	Bapt	1			
	Berberis haematocarpa	Beha	3			
	Cercocarpus montana	Cemo2	1			
	Dasylirion wheeleri	Dawh2	2			
	Krameria parvifolia	Krpa	2			
	Mimosa biuncifera	Mibi3	2			
	Nolina microcarpa	Nomi	2			
	Opuntia engelmanii	Open2	1			
	Opuntia fulgida	Opfu	T			
	Opuntia spinosior	Opsp	T			
	Prosopis velutina	Prve	3			
	Quercus turbinella	Qutu2	6			
	Rhus trilobata	Rhtr	T			
	Yucca baccata	Yuba	2			
	Yucca elata	Yuel	1			
Forbs:						
	Eriogonum	ERIOG	1			
	Erodium cicutarium	Erci	T			
	Gutierrezia sarothrae	Gusa2	T			
	Haplopappus	HAPLO2	T			
Graminoids:						
	Andropogon barbinodis	Anba	1			
	Andropogon saccharoides	Ansa	T			
	Andropogon scoparius	Ansc2	T			
	Aristida	ARIST	5			
	Bouteloua curtipendula	Bocu2	3			
	Bouteloua eriopoda	Boer4	1			
	Bouteloua hirsuta	Bohi2	1			
	Eragrostis intermedia	Erin	T			
	Hilaria belangeri	Hibe	3			
	Hilaria mutica	Himu2	T			
	Koeleria cristata	Kocr	T			
	Lycurus phleoides	Lyph	5			
	Muhlenbergia porteri	Mupo	7			
	Sitanion hystrix	Sihy	5			
	Tridens mutica	Trmu	5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 09/03/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3124 - Lithic Ustochrepts, LSM, 3, +1, loamy-skeletal, mixed, thermic, very cobbly sandy loam: Prve/Beha/Fosp2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on hilly to steep complex hills bounded by mountains, scarps and canyons. Mean annual precipitation ranges from 42 to 46 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 10 centimeters. The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters. Delineations are irregular in shape and vary in size from 40 to 1200 hectares. Ephemeral streams are present within the mapping unit; gullies and rill erosion are conspicuous.
- This mapping unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Lithic Ustochrepts, — loamy-skel., mixed thermic	--- v. cobbly sandy loam —	LSM 3 +1	Prve/Beha/ Fosp2	Zoo-edaphic	44 / 1300 / 16 / 19	Hills; complex slopes averaging 20 meters in length and 20 percent grades; parent material is derived from granite, tuff and Gila conglomerate	85
2.2							
2.3							
2.4							
2.5 Rock outcrop	—	—	—	—	—	—	15
2.6							

3.0 Estimated Soil Properties.

3.1 Lithic Ustochrepts, LSM, 3, +1, loamy-skeletal, mixed, thermic, very cobbly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-48	grvsl	13	40	80	20	5-10	NP	GW	GP	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	16.0	4.5	9.3	15.3
											—	—	.10	% Veg. Ground Cover 0	30	10	25
Management Implications: —											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	.5	70	10	0	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3124
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	100			
Forage (maximum)	200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	—			
Potential for:		Rating		
Revegetation	Low			
	Too cobbly			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Pyrrhuloxia	Essential			
Phainopepla	Important			
Ash-throated Flycatcher	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Too cobbly			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus Erythrocarpa	Juer	T			
Cercidium microphyllum	Cemi2	T			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	A			
Baccharis pteroniodes	Bapt2	T			
Berberis haematocarpa	Beha	3			
Calliandra eriophylla	Caer	T			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleri	Dawh2	.50			
Fouqueria splendens	Fosp2	3			
Krameria parvifolia gland.	Krpag	T			
Mimosa biuncifera	Mibi3	1			
Opuntia bigelovii	Opbi	1			
Opuntia engelmanii	Open2	1			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	2			
Yucca baccata	Yuba	.50			
Yucca elata	Yuel	.50			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	5			
Haplopappus	HAPLO2	1			
Graminoids:					
Andropogon barbinodis	Anba	T			
Andropogon saccharoides	Ansa	T			
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	T			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	T			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Sitanion hystrix	Sihy	T			
Trichachne californica	Trca2	T			
Tridens mutica	Trmu	T			

6.0 Mangement Implications:

6.1 This map unit has been degraded from Grama-Tobosa grassland; some species may be re-established using winter moisture as a guide and broadcast or aerial seeding in early fall.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3187 - Vertic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, deep, clay loam: Juos/Juer/Prve, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 900 hectares. Sheet and rill erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm ME m MAST deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Vertic Haplustalfs, —— fine, mont., thermic	deep —— clay loam ——	LSM 4 -1	Juos/Juer/Prve	Edaphic	48 cm 1400 m 15 deg.C 18 deg.C	Elevated plains; single concaved slopes averaging 30 meters in length and 2 percent grades; parent material is residuum from basalt.	90
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Typic Haplustalfs, —— fine, mont., thermic	deep —— —— ——	LSM 4 -1	Juer/Prve/Hibe	Zoo-edaphic	48 cm 1400 m 15 deg.C 18 deg.C	Elevated plains; single concaved slopes averaging 20 meters in length and 5 percent grades; parent material is derived from basalt.	10
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Vertic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, deep, clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	c	48	0	10	90	70-85	55	25	CH	High	——	——	——	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	3.7	2.2	0.5	1.6
														% Veg. Ground Cover			
											Hard	bas	.32	0	15	50	35
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											——	——	.8	10	5	45	40

Management Implications: These soils have entered the Vertic subgroup under severe & extended erosion; this is a nearly irreversable situation which adversely affects soil productivity. The unusually high litter content encountered in transects is the result of litter damming, which occurs under excessive overland water flow.

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3187
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	500			
Timber	Site Index			
Ponderosa pine	---			
Fuelwood	cd/ac			
Juniper	---			
Potential for:	Rating			
Revegetation	Low			
	Too clayey			
Reforestation	---			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	---			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Severe			
	Too clayey			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate *			
Mass Wasting	---			
Windthrow	---			
Plant Competition	---			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus erythrocarpa	Juer	1			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	1			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	T			
Berberis haematocarpa	Beha	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleri	Dawh2	T			
Krameria parvifolia	Krpa	T			
Mimosa biuncifera	Mibi3	T			
Nolina microcarpa	Nomi	3			
Opuntia engelmanii	Open2	T			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Yucca schottii	Yusc	T			
Forbs:					
Astralagus	ASTRA	T			
Eriogonum	ERIOG	T			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	1			
Haplopappus	HAPLO2	T			
Helianthus annuus	Hean3	1			
Graminoids:					
Andropogon barbinodis	Anba	1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	15			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	T			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors cool season growth. Deep, wide cracks appear when soils are dry. These cracks are sometimes wide enough to cause a tripping hazard for livestock.

6.2

6.3

6.4

Notes: * Based on average slope for this map unit; change rating to "severe" on slopes greater than 5 percent.

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/03/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3230 - Aridic Haplustalfs, LSM, 3, 0, fine-loamy, mixed, thermic, deep, gravelly sandy loam: Prve/Beha/Boh12/Boer4, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on nearly level to strongly sloping convex elevated plains bounded by hills. Mean annual precipitation ranges from 38 to 42 centimeters; mean annual air temperature ranges from 17 to 19 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 230 days. Elevations range from 1000 to 1300 meters on all aspects. Delineations are irregular in shape and vary in size from 40 to 150 hectares. Intermittent streams are present within the mapping unit. Sheet and rill erosion occurs on localized sites. This mapping unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Com %
2.1 Aridic Haplustalfs, — fine-loamy, mixed, thermic	deep gravelly sandy loam —	LSM 3 0	Prve/Beha/ Boh12/Boer4	Edaphic	40 cm 1200 m 17 deg.C 20 deg.C	Elevated plains with simple convex slopes, averaging 30 meters in length and 5 percent grades; parent material is alluvium from mixed sources.	85
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Aridic Haplustalfs, — loamy-skeletal, mixed, thermic	deep — — —	LSM 3 0	Prve/Beha/ Boh12/Boer4	Edaphic	40 cm 1200 m 17 deg.C 20 deg.C	Elevated plains; simple convex slopes averaging 30 meters in length with 2 percent grades; parent material is alluvium from mixed sources.	15
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, 0, fine-loamy, mixed, thermic, deep, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	grl	22	20	35	65	40-50	20	10	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	3.8	6.7	1.6	1.1
											—	—	.15	% Veg. Ground Cover 0	0	15	30
Management Implications: —											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	.5	25	10	5	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3230
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	400			
Forage (maximum)	450			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Pyrrhuloxia	Essential			
Phainopepla	Important			
Ash-throated Flycatcher	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:	—	A			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	1			
Agave	AGAVE	T			
Baccharis pteroniodes	Bapt2	1			
Berberis haematocarpa	Beha	3			
Calliandra eriophylla	Caer	T			
Canotia holacantha	Caho3	A			
Ceanothus greggii	Cegr	1			
Dasylirion wheeleri1	Dawh2	2			
Fouquieria splendens	Fosp2	A			
Krameria parvifolia gland.	Krpag	2			
Mimosa biuncifera	Mibi3	1			
Opuntia engelmannii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	1			
Graminoids:					
Andropogon barbinodis	Anba	1			
Andropogon saccharoides	Ansa	T			
Aristida	ARIST	3			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	4			
Bouteloua hirsuta	Boh12	1			
Eragrostis intermedia	Erin	1			
Hilaria belangeri	Hibe	5			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	1			
Muhlenbergia porteri	Mupo	4			
Sitanion hystrix	Sihy	.5			
Trichachne californica	Trca2	T			
Tridens mutica	Trmu	1.5			

6.0 Mangement Implications:

6.1 This map unit has been degraded from Grama-Tobosa grassland; some species may be re-established using winter moisture as a guide and seeding about October. This unit should respond to the use of a land imprinter in the correct season.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 346'
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	500			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Curbank Stability	Slight			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Steep slopes preclude most management activities; emphasis should be on maintaining slopes in a metastable state. Rainfall is marginal for aerial reseeding projects and moisture distribution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3469 - Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, very gravelly loam: Juos/Juer/Prve/Qutu2, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex mountain slopes. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 100 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Un Co
2.1 Typic Haplustalfs, — loamy-skel., mixed, thermic	--- / v. gravelly loam / —	LSM / 4 / -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1400 / 15 / 18	Mountains; complex slopes averaging 15 meters in length and 45 percent grades; parent material is residuum from mixed metamorphic rocks.	
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Lithic Ustochrepts, — loamy-skel., mixed, thermic	— / — / — / —	LSM / 4 / -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1300 / 15 / 18	Mountains; complex slopes averaging 10 meters in length and a gradient of 50 percent; parent material is from mixed sources.	1
2.6 Rock outcrop	—	—	—	—	— / cm / m / deg.C / deg.C	—	10

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
5-55	grvcl	32	10	55	45	35-40	30	15	GC	Lowh	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	6	1.1	6.7	26.4 / 26.4
														% Veg. Ground Cover			
											Hard	—	.10	0	55	20	20
Management Implications: —											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	.8	45	20	0	35

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3371
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	high			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Boh12	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3371 - Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, very gravelly loam: Juos/Juer/Prve/Qutu2, 0-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on dissected plains and hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 600 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Haplustalfs, — fine-loamy, mixed, thermic	deep v. gravelly loam dissected	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Hills and plains; complex slopes averaging 15 meters in length and 35 percent grades; parent material is from mixed sources.	
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Haplustalfs, — fine, mixed, thermic	— — —	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Elevated plains; complex slopes averaging 15 meters in length and 30 percent grades; parent material is from mixed sources.	
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
18-68	cl	34	0	15	85	60-70	30	15	CL	Low	—	—	—	Rate - t/ha/yr 41.1	6.7	25.7	17.7

Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
—	—	.10	0	50	10	2

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.8	65	10	0	25

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			

Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			

Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			

Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3360
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	600			
Forage	50			
Forage (maximum)	150			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too alkaline			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Baccharis pteroniodes	Bapt2	.10			
Berberis haematocarpa	Beha	3			
Canotia holacantha	Caho3	10			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	2			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	.50			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	.10			
Sitanion hystrix	Sihy	T			
Tridens mutica	Trmu	.10			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Alkaline-tolerant species must be used. Steep slopes favor aerial reseeding over other methods.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA FS
2550-7
01/07/85

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3360 - Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic, deep, very gravelly loam: Juos/Juer/Prve/Qutu2/Caho3, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep to very steep hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 400 hectares. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit %
2.1 Typic Ustochrepts, calcareous, coarse-loamy, mixed, thermic	deep v. gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 / 1400 / 15 / 18	Hills; complex slopes averaging 10 meters in length and 45 percent grades; parent material is from calcareous valley fill and limestone.	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Ustochrepts, --- loamy-skel., mixed, thermic	--- --- --- ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 / 1400 / 15 / 18	Hills; complex slopes averaging 10 meters in length and 45 percent grades; parent material is from calcareous valley fill.	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grl	17	20	25	75	45-55	20	15	SM	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	49.9	6.7	38.4	128
											---	---	.10	% Veg. Ground Cover			
														0	50	5	20

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	.5	55	5	0	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

6A

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3359
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600			
Forage	50			
Forage (maximum)	150			
Timber		Site Index		
Ponderosa pine	---			
Fuelwood		cd/ac		
Juniper	.5			
Potential for:		Rating		
Revegetation	Low			
	Too alkaline			
Reforestation	---			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	---			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	---			
Windthrow	---			
Plant Competition	---			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Baccharis pteroniodes	Bapt2	.10			
Berberis haematocarpa	Beha	3			
Canotia holacantha	Caho3	10			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleriii	Dawh2	2			
Krameria parvilfolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	2			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	.50			
Gramminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Boh12	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	.10			
Sitanion hystrix	Sihy	T			
Tridens mutica	Trmu	.10			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Alkaline-tolerant species must be used.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3359 - Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic, deep, very gravelly loam: Juos/Juer/Prve/Qutu2/Caho3, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep to steep hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 400 hectares. Ephemeral streams are present within the map unit. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Ustochrepts, calcareous, coarse-loamy, mixed, thermic	deep v. gravelly loam	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Hills; complex slopes averaging 15 meters in length and 30 percent grades; parent material is from calcareous valley fill and limestone.	
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Ustochrepts, loamy-skel., mixed, thermic		LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Hills; complex slopes averaging 10 meters in length and 35 percent grades; parent material is from calcareous valley fill.	
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grl	16	5	20	80	50-60	20	15	CL	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	32.0	6.7	20.0	13.8
											—	—	.10	% Veg. Ground Cover			
														0	40	10	1.2

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil
—	—	.5	50	10	0	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3355
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	50			
Forage (maximum)	200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	4			
Potential for:		Rating		
Revegetation (drill)	Low			
	Too alkaline			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Pinyon Jay	Important			
Gambel Quail	Important			
Pinyon Mouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Cupressus glabra	Cugl	10			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	8			
Pinus monophylla	Pimo	5			
Shrubs:					
Acacia greggii	Acgr	T			
Arctostaphylos pungens	Arpu5	8			
Baccharis pteronioides	Bapt	T			
Canotia holacantha	Caho3	2			
Cercocarpus montana	Cemo2	T			
Cowania neomexicana stans.	Comes	1			
Dasylirion wheeleri	Dawh2	1			
Garrya wrightii	Gawr	T			
Krameria parvifolia gland.	Krpag	T			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	T			
Opuntia engelmannii	Open2	T			
Prosopis velutina	Prve	A			
Quercus turbinella	Qutu2	9			
Rhamnus crocea illicifolia	Rhcr	T			
Rhus ovata	Rhov	T			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Yucca schottii	Yusc	T			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	1			
Graminoids:					
Andropogon barbinodis	Anba	T			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua eriopoda	Boer4	.50			
Bouteloua hirsuta	Bohi2	.50			
Hilaria belangeri	Hibe	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Sitanion hystrix	Sihy	T			

6.0 Mangement Implications:

6.1 Moisture is adequate for reseeding projects; moisture distribution favors cool season and carbonate content limits plant selection.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/[redacted]/85

1.0 Date: 9/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3355 - Typic Ustochrepts, LSM, 4, 0, calcareous, fine-loamy, mixed, mesic, deep, gravelly loam: Cug1/Pimo/Caho3/Comes/Arpu5, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on strongly sloping elevated pl[redacted]ns in old burn areas bounded by mountains. Mean annual precipitation ranges from 45 to 55 centimeters; mean annual air temperature ranges from 15 to 16 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 30 centimeters. The freeze free period is 200 days. Elevations range from 1000 to 1500 meters. Delineations are irregular in shape and vary in size from 15 to 40[redacted] hectares. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Com. %
2.1 Typic Ustochrepts, calcareous, fine-loamy, mixed, mesic	deep gravelly loam ---	LSM 4 0	Cug1/Pimo/Caho3/Comes/Arpu5	Topo-edaphic fire	50 1500 15 17	cm m deg.C deg.C	Plains; complex slopes with an average length of 15 meters and a gradient of 10 percent; parent material is derived from carbonate enriched mixed sources.	
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5						cm m deg.C deg.C		
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, 0, calcareous, fine-loamy, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	1	22	0	15	85	55-70	25	10	ML	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	11.0	6.7	1.2	4.4
											---	---	.20	% Veg. Ground Cover 0	10	50	[redacted]

Management Implications: High ground cover is the result of litter damming.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil
---	---	1	20	5	45	[redacted]

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3352
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600			
Forage	50			
Forage (maximum)	150			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	—			
Potential for:		Rating		
Revegetation	Low			
	Too alkaline			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Severe			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Moderate			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia gregoii	Acgr	T			
Baccharis pteroniodes	Bapt2	.10			
Berberis haematocarpa	Beha	3			
Canotia holacantha	Caho3	10			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	2			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	.50			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	.10			
Sitanion hystrix	Sihy	T			
Tridens mutica	Trmu	.10			

6.0 Management Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Alkaline-tolerant species must be used. Excessive slopes favor aerial reseeding over other methods.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3352 - Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, very gravelly loam Juos/Juer/Prve/Qutu2/Caho3, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep to very steep hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 400 hectares. Ephemeral streams are present within the map unit. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm ME m MAST deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Ustochrepts, calcareous, fine-loamy, mixed, thermic	deep gravelly loam	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 1400 m 15 deg.C 18 deg..	Hills; complex slopes averaging 10 meters in length and 60 percent grades; parent material is from calcareous valley fill .	
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Typic Haplustalfs, fine-loamy, mixed, thermic		LSM 4 -1	Juos/Juer/ Prve/Qutu2/	Edaphic	48 1400 m 15 deg.C 18 deg..	Hills; complex slopes averaging 10 meters in length and 60 percent grades; parent material is from calcareous valley fill .	1
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grl	26	15	35	65	40-50	25	10	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	76.0	6.7	27.4	32.8
											—	—	.10	% Veg. Ground Cover 0	60	25	20
Management Implications: —											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	.5	40	15	10	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3351
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600			
Forage	50			
Forage (maximum)	150			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	.5			
Potential for:		Rating		
Revegetation	Low			
	Too alkaline			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Baccharis pteroniodes	Bapt2	.10			
Berberis haematocarpa	Beha	3			
Canotia holacantha	Caho3	10			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	2			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	.50			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	.10			
Sitanion hystrix	Sihy	T			
Tridens mutica	Trmu	.10			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Alkaline-tolerant species must be used.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-F[redacted]
25[redacted]
01/[redacted]/85

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3351 - Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, very gravelly loam: Juos/Juer/Prve/Qutu2/Caho3, [redacted]15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep to steep hi[redacted]. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 400 hectares. Ephemeral streams are present within the map unit. Sheet and rill erosion is conspicuous. This map unit is characterize[redacted] by a dendritic drainage pattern.

* Little Documentation, Doc shows Haplustalfs. conceptual M.U.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit [redacted]
2.1 Typic Ustochrepts, * calcareous, fine-loamy, mixed, thermic	deep v. gravelly loam —	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 / 1400 / 15 / 18	Hills; complex slopes averaging 10 meters in length and 35 percent grades; parent material is from calcareous valley fill.	[redacted]
2.2					cm / m / deg.C / deg.C		[redacted]
2.3					cm / m / deg.C / deg.C		[redacted]
2.4					cm / m / deg.C / deg.C		[redacted]
2.5 Typic Haplustalfs, — fine-loamy, mixed, thermic	— — — —	LSM 4 -1	Juos/Juer/ Prve/Qutu2/	Edaphic	48 / 1400 / 15 / 18	Hills; complex slopes averaging 10 meters in length and 35 percent grades; parent material is from calcareous valley fill.	[redacted]
2.6					cm / m / deg.C / deg.C		[redacted]

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grl	23	5	20	80	50-60	25	10	ML	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	33.5	6.7	14.5	14.5
											—	—	.10	% Veg. Ground Cover 0	45	20	2[redacted]

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil BA
—	—	.5	40	15	5	4[redacted]

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil BA

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil BA

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil BA

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 335O
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600			
Forage	50			
Forage (maximum)	150			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	.5			
Potential for:		Rating		
Revegetation	Low			
	Too alkaline			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Severe			
	Too alkaline			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Baccharis pteroniodes	Bapt2	.10			
Berberis haematocarpa	Beha	3			
Canotia holacantha	Caho3	10			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	2			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	.50			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	T			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	.10			
Sitanion hystrix	Sihy	T			
Tridens mutica	Trmu	.10			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Alkaline-tolerant species must be used.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USD[redacted]FS
2550-7
01/07/85

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3350 - Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, gravelly loam: Juos/Juer/Prve/Qutu2/Caho3, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 15 to 400 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit.

* Doc. show a large % of Haplustalfs.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MEAST / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Comp %
2.1 Typic Ustochrepts, calcareous, fine-loamy, mixed, thermic *	deep gravelly loam	LSM 4 -1	Juos/Juer/ Prve/Qutu2/ Caho3	Edaphic	48 1400 15 18	m deg.C deg.C	Elevated plains; complex slopes averaging 20 meters in length and 5 percent grades; parent material is from calcareous valley fill.	100
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5						m deg.C deg.C		
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	N
25-100	1	24	0	10	90	55-70	25	10	ML-CL	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	5.0	6.7	3.1	[illegible]
													20	% Veg. Ground Cover			
														0	0	10	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.	S
—	—	5	20	10	0	70

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.	N
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.	S

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.	N
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	Sc

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Na
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	Soil

7A

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/03/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3335 - Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam; Prve/Beha/Acgr/Gusa2, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep to very steep complex hills bounded by elevated plains and mountains. Mean annual precipitation ranges from 42 to 46 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 10 centimeters. The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters on all aspects. Delineations are irregular in shape and vary in size from 40 to 1200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Aridic Haplustalfs, — loamy-skel., mixed, thermic	deep v.gravelly sandy loam —	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	44 / 1300 / 16 / 19	Hills; complex slopes averaging 15 meters in length and 50 percent grades; parent material is derived from mixed sources.	95
2.2							
2.3							
2.4							
2.5 Rock outcrop	—	—	—	—	—	—	5
2.6							

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	gryl	15	25	35	65	40-50	30	15	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	60.4	6.7	27.7	120.2
											—	—	.10	% Veg. Ground Cover 0	55	15	25

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.5	35	10	5	50

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.	Lit.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA FS
255
01/0 85

1.0 Date: 09/03/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3335 - Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam: Prve/Beha/Acgr/Gusa2, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep to very steep complex h s bounded by elevated plains and mountains. Mean annual precipitation ranges from 42 to 46 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 10 centimeters. The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters on all aspects. Delineations are irregular in shape and vary in s from 40 to 1200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Aridic Haplustalfs, — loamy-skel., mixed, thermic	deep v.gravelly sandy loam —	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	44 / 1300 / 16 / 19 (cm / m / deg.C / deg.C)	Hills; complex slopes averaging 15 meters in length and 50 percent grades; parent material is derived from mixed sources.	
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock outcrop	—	—	—	—	— / — / deg.C / deg.C	—	
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	grvl	15	25	35	65	40-50	30	15	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	60.4	6.7	27.7	120
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.10	0	55	15	25

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.5	35	10	5	50

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3334
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	600			
Forage	200			
Forage (maximum)	550			
Timber	Site Index			
Ponderosa pine	---			
Fuelwood	cd/ac			
Pinyon/juniper	---			
Potential for:	Rating			
Revegetation	Moderate			
	Too steep			
Reforestation	---			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Pyrrhuloxia	Essential			
Phainopepla	Important			
Ash-throated Flycatcher	Important			
Limitations For:				
Timber Harvest	---			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	---			
Windthrow	---			
Plant Competition	---			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus Erythrocarpa	Juer	T			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	4			
Agave	AGAVE	A			
Baccharis pteroniodes	Bapt2	T			
Berberis haematocarpa	Beha	3			
Calliandra eriophylla	Caer	T			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleri	Dawh2	3			
Foquieria splendens	Fosp2	T			
Krameria parvifolia gland.	Krpag	T			
Mimosa biuncifera	Mibi3	2			
Opuntia bigelovii	Opbi	T			
Opuntia engelmanii	Open2	1			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	8			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	10			
Haplopappus	HAPLO2	1			
Graminoids:					
Andropogon barbinodis	Anba	T			
Andropogon saccharoides	Ansa	T			
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	T			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	1			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Sitanion hystrix	Sihy	T			
Trichachne californica	Trca2	T			
Tridens mutica	Trmu	T			

6.0 Mangement Implications:

6.1 This map unit has been degraded from Grama-Tobosa grassland; some species may be re-established using winter moisture as a guide and broadcast or aerial seeding in early fall.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/03/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3334 - Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam: Prve/Beha/Acgr/Gusa2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on hilly to steep complex hills bounded by elevated plains and mountains. Mean annual precipitation ranges from 42 to 46 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 10 centimeters. The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters. Delineations are irregular in shape and vary in size from 40 to 1200 hectares. Ephemeral streams are present within the mapping unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Aridic Haplustalfs, loamy-skel., mixed thermic	deep v.gravelly sandy loam	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	44 / 1300 / 16 / 19	Hills; complex slopes averaging 15 meters in length and 30 percent grades; parent material is old alluvium from mixed sources.	95
2.2							
2.3							
2.4							
2.5 Rock outcrop							5
2.6							

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, +1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	grvcl	33	25	40	60	40-50	30	15	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	26.9	6.7	9.0	9.0
											—	—	.10	% Veg. Ground Cover			
														0	35	25	25

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.5	40	20	0	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3333
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Slight			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3333 - Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, deep, very gravelly sandy loam: Juos/Juer/Prve/Qutu2, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 20 to 150 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Haplustalfs, — loamy-skel., mixed, thermic	deep v.gravelly sandy loam —	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm 1400 m 15 deg.C 18 deg.C	Elevated plains; complex slopes averaging 20 meters in length and 5 percent grades; parent material is from mixed sources.	
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Lithic Ustochrepts, — loamy-skel., mixed, thermic	— — — dissected	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm 1400 m 15 deg.C 18 deg.C	Elevated plains; complex slopes averaging 15 meters in length and 15 percent grades; parent material is derived from granite.	
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, deep very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
2-52	grvcl	31	0	65	35	25-35	30	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	2.5	6.7	2.5	2.5
											—	—	.10	% Veg. Ground Cover 0		20	2

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil
—	—	.8	40	15	5	4

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg.	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3306
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600			
Forage	200			
Forage (maximum)	550			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	—			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	Important			
Javelina	Important			
Pyrrhuloxia	Essential			
Phainopepla	Important			
Ash-throated Flycatcher	Important			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Moderate			
Unsurfaced Roads	Poor			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Moderate			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus Erythrocarpa	Juer	T			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	6			
Agave	AGAVE	A			
Baccharis pteroniodes	Bapt2	T			
Berberis haematocarpa	Beha	3			
Calliandra eriophylla	Caer	T			
Canotia holacantha	Caho3	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleri	Dawh2	T			
Fouquieria splendens	Fosp2	A			
Krameria parvifolia gland.	Krpag	T			
Mimosa biuncifera	Mibi3	2			
Opuntia bigelovii	Opbi	T			
Opuntia engelmanii	Open2	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	8			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Forbs:					
Eriogonum	ERIOG	T			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	10			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	T			
Andropogon saccharoides	Ansa	T			
Aristida	ARIST	.50			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	T			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	4			
Hilaria mutica	Himu2	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Sitanion hystrix	Sihy	T			
Trichachne californica	Trca2	T			
Tridens mutica	Trmu	T			

6.0 Mangement Implications:

6.1 This map unit has been degraded from Grama-Tobosa grassland; some species may be re-established using winter moisture as a guide and broadcast or aerial seeding in early fall. Use of land imprinter anmd tillage equipment is limited to localized sites; moisture content of upper 12 inches of soil is critical.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/0[illegible]85

1.0 Date: 09/10/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3306 - Aridic Haplustalfs, LSM, 3, +1, clayey-skeletal, montmorillonitic, thermic, very gravelly sandy loam: Prve/Beha/Acgr/Gusa2, ~~[illegible]~~ 0-15 slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping to moderately steep elevated plains bounded by hills. Mean annual precipitation ranges from 42 to 46 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 10 centimeters. The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters.. Delineations are irregular in shape and vary in size from 15 to 200 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Aridic Haplustalfs, clayey-skel.,mont., thermic	v. grav. sandy loam	LSM 3 +1	Prve/Beha/ Acgr/Gusa2	Zootic	44 cm / 1300 m / 16 deg.C / 19 deg.C	Plains; simple slopes averaging 15 meters in length and 5 percent grades; parent material is derived from basalt.	1
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, +1, clayey-skeletal, montmorillonitic, thermic, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	cbvc	40	45	40	60	45-55	45	20	CL	High	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	1.8	6.7	1.3	.6
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	bas	.10	0	0	5	2

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	Soil
---	---	.5	40	5	0	55

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3261
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	---			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	High			
Reforestation	---			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	---			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	---			
Windthrow	---			
Plant Competition	---			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3261 - Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, gravelly loam: Juos/Juer/Prve Qutu2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on rolling to steep complex hill Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 200 to 2800 hectares This map unit is characterized by a dendritic drainage pattern. Rill and gully erosion occurs on localized sites.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm ME m MAST deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit
2.1 Typic Haplustalfs, — fine-loamy, mixed, thermic	deep gravelly loam	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 1400 m 15 deg.C 18 deg..	Hills; complex convex slopes averaging 15 meters in length and 20 percent grades; parent material is from mixed sources.	
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Typic Haplustalfs, — fine, mixed, thermic	--- --- --- ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 1400 m 15 deg.C 18 deg..	Hills; complex convex slopes averaging 20 meters in length and 10 percent grades; parent material is from mixed sources.	
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	grcl	32	15	40	60	40-50	30	15	SC	Low	—	—	—		Rate - t/ha/yr		
											Bedrock		Factor	32.8	6.7	14.2	14.8
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.20	0	40	20	2

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.8	30	20	0	5

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
															Rate - t/ha/yr		
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
															Rate - t/ha/yr		
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
															Rate - t/ha/yr		
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3236
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeelerii	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3236 - Typic Haplustalfs, LSM, 4, -1, fine, mixed, thermic, deep, cobbly loam: Juos/Juer/Prve/Qutu2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on rolling to steep complex hill[redacted] Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 30 to 200 hectares. This map unit is characterized by a dendritic drainage pattern. Rill and gully erosion occurs on localized sites.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Haplustalfs, — fine, mixed, thermic	deep cobbly loam —	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Hills; complex convex slopes averaging 15 meters in length and 20 percent grades; parent material is from mixed sources.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell Mod.	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	cl	38	0	0	100	70-80	35	15	CL		—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	32.8	6.7	14.2	14[redacted]
											—	—	.20	% Veg. Ground Cover 0	40	20	2[redacted]

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.8	20	20	0	6[redacted]

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3231
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Molina microcarpa	Momi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qurtu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3231 - Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, very gravelly sandy loam: Juos/Juer/Prve/Qutu2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on rolling to steep complex hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 40 to 600 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet, rill and gully erosion occurs within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit
2.1 Typic Haplustalfs, — loamy-skel., mixed, thermic	--- v.gravelly sandy loam —	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1400 / 15 / 18	Hills; convex, complex slopes averaging 15 meters in length and 20 percent grades; parent material is from mixed sources.	
2.2							
2.3							
2.4							
2.5 Typic Haplustalfs, — fine-loamy, mixed, thermic	--- — — dissected	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1400 / 15 / 18	Hills; convex, complex slopes averaging 15 meters in length and 20 percent grades; parent material is derived from diabase.	
2.6							

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	grvcl	33	20	50	50	35-40	30	15	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	16.4	6.7	7.1	7
											—	—	.10	% Veg. Ground Cover			
														0	25	20	2

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.8	65	10	10	1

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

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TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3520 - Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, deep, cobbly loam: Juos/Juer/Prve, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 900 hectares. Sheet and rill erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, —— fine, mont., thermic	deep cobbly loam ——	LSM 4 -1	Juos/Juer/ Prve	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Elevated plains; single concaved slopes averaging 25 meters in length and 2 percent grades; parent material is residuum from basalt.	90
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	——	——	——	——	—— cm / —— m / —— deg.C / —— deg.C	——	5
2.6 Vertic Haplustalfs, —— fine, mont., thermic	deep cobbly clay loam ——	LSM 4 -1	Juer/Prve/ Hibe	Zoo-edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Elevated plains; single concaved slopes averaging 25 meters in length and 2 percent grades; parent material is residuum from basalt.	5

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	c	40	0	10	90	70-85	45	20	CL	High	——	——	——	Rate - t/ha/yr			
											Bedrock			2.2	6.7	.9	.9
											Hard.	Kind	Factor K	% Veg. Ground Cover			
											Hard	bas	.20	0	0	35	35

Management Implications: These soils can be converted to vertisols under conditions of extended erosion; once started, this would be an nearly irreversable process which adversely affects soil productivity.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
——	——	.8	35	30	5	30

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3520
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	Moderate			
	Too cobbly			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too clayey			
Campgrounds	Severe			
	Too clayey			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	T			
Berberis haematocarpa	Beha	T			
Ceanothus greggii	Cegr	T			
Dasylirion wheeleriii	Dawh2	T			
Krameria parvifolia	Krpa	T			
Mimosa biuncifera	Mibi3	T			
Nolina microcarpa	Nomi	3			
Opuntia engelmanii	Open2	T			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Yucca baccata	Yuba	T			
Yucca elata	Yuel	T			
Yucca schottii	Yusc	T			
Forbs:					
Astralagus	ASTRA	T			
Eriogonum	ERIOG	T			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	1			
Haplopappus	HAPLO2	T			
Helianthus annuus	Hean3	1			
Graminoids:					
Andropogon barbinodis	Anba	1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	T			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	15			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia porteri	Mupo	T			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	T			

6.0 Management Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule. Localized sunflower communities may indicate soils entering the churning stage.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3521 - Typic Haplustalfs, LSM, 4, -1, clayey-skeletal, mixed, thermic, deep, cobbly clay loam: Juos/Juer/Prve/Qutu2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep complex hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 600 hectares. Sheet and rill erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Co
2.1 Typic Haplustalfs, clayey-skel., mixed, thermic	deep cobbly loam	LSM 4 -1	Juos/Juer/Prve/Qutu2	Edaphic	48 / 1400 / 15 / 18	cm / m / deg.C / deg.C	Hills; complex convex slopes averaging 15 meters in length and 25 percent grades; parent material is residuum from basalt	90
2.2						cm / m / deg.C / deg.C		
2.3						cm / m / deg.C / deg.C		
2.4						cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	—	cm / m / deg.C / deg.C	—	10
2.6						cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, clayey-skeletal, mixed, thermic, deep cobbly clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	grvcl	36	15	40	60	40-50	30	15	SC	High	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	35.5	6.7	22.2	15.3
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	bas	.15	0	45	10	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	.8	30	5	5	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3521
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	Moderate			
	Too cobbly			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Moderate			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Steeper slopes, clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3710 - Typic Haplustalfs, LSM, 4, 0, fine, montmorillonitic, mesic, deep, gravelly loam: Pimo/Juos/Qutu2/Arpu5, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 10 to 1500 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, — fine, mont., mesic	deep gravelly loam —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm / 1500 m / 14 deg.C / 17 deg.C	Elevated plains; single concave slopes averaging 20 meters in length and 5 percent grades; parent material is residuum from basalt.	90
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Vertic Haplustalfs, — fine, mont., mesic	— — — —	LSM 4 0	Juos/Hibe/ Paob	Zoo-edaphic	52 cm / 1500 m / 14 deg.C / 17 deg.C	Elevated plains; single concave slopes averaging 15 meters length and 2 percent grade; parent material is residuum from basalt.	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, fine, montmorillonitic, mesic, deep gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	c	41	10	10	90	70-85	45	20	CL	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	5.0	6.7	2.0	2.0
											Hard	bas	.20	% Veg. Ground Cover 0	0	25	25

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	15	15	10	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3710
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Juniper	3			
Potential for:	Rating			
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Low			
Campgrounds	Severe			
	Too clayey			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	20			
Pinus monophylla	Pimo	5			
Shrubs:					
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Helianthus annuus	Hean3	2			
Graminoids:					
Agropyron smithii	Agsm	.1			
Andropogon barbinodis	Anba	.1			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	T			
Hilaria belangerii	Hibe	3			
Koeleria kristata	Kocr	.1			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.5			
Panicum obtusum	Paob	.5			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule. Localized sunflower communities may indicate soils entering the churning stage.

6.2

6.3

6.4

Notes:

#3711

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3711 - Typic Haplustalfs, LSM, 4, 0, fine, montmorillonitic, mesic, deep, cobbly clay loam: Pimo/Juos/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 10 to 600 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, — fine, mont., mesic	deep cobbly clay loam —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg.C	Hills; complex slopes averaging 15 meters in length and 25 percent grades; parent material is residuum from basalt.	85
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Typic Haplustalfs, — fine mont., mesic	— — — —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg.C	Hills; complex slopes averaging 15 meters in length and 25 percent grades; parent material is residuum from basalt.	15
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, fine, montmorillonitic, mesic, deep cobbly clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
13-63	grc	44	15	35	65	50-65	50	25	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	35.5	6.7	20.6	14.4
											Hard	bas	.15	% Veg. Ground Cover 0	45	10	25
Management Implications: —											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	1	30	5	5	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3711
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	2			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1 %	5.2 Canopy	5.3 Cover	5.4
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	15			
Pinus monophylla	Pimo	5			
Shrubs:					
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Helianthus annuus	Hean3	2			
Graminoids:					
Agropyron smithii	Agsm	.1			
Andropogon barbinodis	Anba	.1			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	T			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	.1			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.5			
Panicum obtusum	Paob	.5			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-F
2550-7
01/07/8

1.0 Date: 08/20/85

Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3712 - Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, montmorillonitic, mesic, deep, very cobbly loam: Pimo/Juos/Qutu2/Arpu5, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 10 to 1000 hectares. Sheet, rill and gully erosion is conspicuous within the map unit; the characteristic drainage pattern is parallel.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Com. %
2.1 Typic Haplustalfs, — clayey-skeletal, mont., mesic	deep v.cobbly loam —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg.C	Hills; complex slopes averaging 10 meters in length and 50 percent grades; parent material is residuum from basalt.	90
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm m deg.C deg.C	—	10
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, montmorillonitic, mesic, deep very cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cbvc	46	45	25	75	60-75	50	25	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	87.7	6.7	150.9	135.5
											Hard	bas	.15	% Veg. Ground Cover 0	60	10	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	60	5	5	30

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3712
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/Juniper	2			
Potential for:	Rating			
Revegetation	Low			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Too steep			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	5			
Shrubs:					
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Helianthus annuus	Hean3	2			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	T			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	1			
Lycurus phleoides	Lyph	5			
Muhlenbergia porteri	Mupo	5			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	5			
Tridens mutica	Trmu	5			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor rhizomatous or stoloniferous grasses, such as curly mesquite. Expanding lattice clays and surface rock content are limiting factors for mechanical site preparation. Rainfall is marginal for reseeding projects and moisture distribution favors a cool season planting schedule.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA
2550 7
01/07 85

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3730 - Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, gravelly loam: Pimo/Juos/Outu2/Arpu5, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on elevated plains and pediments. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 10 to 400 hectares. Sheet, rill and gully erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm ME m MAST deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, —— fine-loamy, mixed, mesic	deep gravelly loam ——	LSM 4 0	Pimo/Juos/ Outu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg.C	Plains; complex, badly eroded slopes averaging 15 meters in length and 10 percent grades; parent material is residuum from diabase	95
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock Outcrop	——	——	——	——	—— cm m deg.C deg.C	——	5
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cl	32	0	10	90	65-70	30	15	CL	Low	——	——	——	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	11.0	6.7	6.4	4.4
											Soft	dia	.20	% Veg. Ground Cover 0	10	10	20
Management Implications: Litter dams are common due to excessive surface runoff. Chemical tests show varying amounts of sodium up to 400 PPM, enough to have a dispersing effect on soil particles and reduce infiltration.											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											——	——	1	15	5	5	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3730
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	8			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Moderate			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Gully	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	15			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koeleria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Mangement Implications:

6.1 Diabase derived soils tend to be saprolitic in the substrata. This characteristic, combined with small amounts of sodium, creates a high runoff situation whenever ground cover is removed, resulting in high gullying potential.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3731 - Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, gravelly loam: Pimo/Juos/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 10 to 400 hectares. Sheet, rill and gully erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / MAT m / MWT deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, fine-loamy, mixed, mesic	deep gravelly loam	LSM 4 0	Pimo/Juos/Qutu2/Arpu5	Edaphic	52 cm / 1500 m / 14 deg.C / 17 deg.C	Hills; complex, badly eroded slopes averaging 15 meters in length and 30 percent grades; parent material is residuum from diabase.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell
5-55	grcl	34	0	35	65	50-55	30	15	CL	Low

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	63.9	6.7	30.8	25.8
Soft	dia	.20	% Veg. Ground Cover 0	55	15	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	25	0	15	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3731
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	8			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1	5.2	5.3	5.4
		% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	15			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	1			
Dasylirion wheelerii	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Gramminoids:					
Agropyron smithii	Agsm	.1			
Andropogon barbinodis	Anba	.1			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	.10			
Lycurus phleoides	Lyph	.50			
Muhlenbergia porteri	Mupo	.50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	.50			
Tridens mutica	Trmu	.50			

6.0 Mangement Implications:

6.1 Diabase derived soils tend to be saprolitic in the substrata. This characteristic, combined with small amounts of sodium, creates a high runoff situation whenever ground cover is removed, resulting in high gullying potential.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3732 - Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, very gravelly loam: Pimo/Juos/Qutu2/Arpu5, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 30 to 1500 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Haplustalfs, fine-loamy, mixed, mesic	deep v.gravelly loam	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm / 1500 m / 14 deg.C / 17 deg.C	Hills; complex slopes averaging 10 meters in length with a gradient of 50 percent; parent material is residuum from diabase.	9
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, fine-loamy, mixed, mesic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell
5-55	cl	34	5	10	90	65-70	30	15	CL	Low

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	117.	6.7	47.3	47.3
Hard	—	.20	% Veg. Ground Cover 0	65	20	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	40	10	10	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
			Rate - t/ha/yr			
Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3732
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1000			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	6			
Potential for:		Rating		
Revegetation	Low			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	15			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheelerii	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Mangement Implications:

6.1 Diabase derived soils tend to be saprolitic in the substrata. This characteristic, combined with small amounts of sodium, creates a high runoff situation whenever ground cover is removed, resulting in high gullying potential. Steep slopes are an additional limiting factor.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3752 - Typic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, moderately deep, very gravelly loam: Pimo/Juos/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 15 to 800 hectares. Sheet, rill and gully erosion is conspicuous within the map unit; the characteristic drainage pattern is dendritic.

* ALL DOC is Haplustalfs.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Com %
2.1 Typic Ustochrepts, — loamy-skel., mixed, mesic *	mod. deep v.gravelly loam —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm / 1500 m / 14 deg.C / 17 deg.C	Hills; complex slopes averaging 20 meters in length with 25 percent grades; parent material is derived from mixed sources.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, moderately deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
10-75	grvl	26	25	45	55	35-45	25	10	CM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	27.3	6.7	16.5	11
											Hard	—	.10	% Veg. Ground Cove			
														0	35	35	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	So
—	—	1	45	5	30	2

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cove			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	Sc

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Co			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	So

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cove			

ment Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.	So

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3752
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	8			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Too steep			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	10			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	5			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koeleria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Mangement Implications:

6.1 These soils have localized surface rock which may interfere with site preparation in some areas.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/8

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3753 - Typic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly loam: Pimo/Juos/Qutu2/ Arpu5 - Rock outcrop complex, 40-80% slopes

Setting: This map unit consists of two terrestrial ecosystem components, wich occur in an intricate pattern on steep to very steep complex hills. TEC .1 occurs as a soil component on all aspects, while TEC .2 occurs in a random pattern as outcrop. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 20 to 500 hectares. Sheet and rill erosion is conspicuous within the map unit. The characteristic drainage pattern is dendritic.

MUCH of Doc. Shows Haplustalfs. Transects 2 - ALF

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Ustochrepts, — loamy-skel., mixed, mesic	--- v.gravelly loam —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg.C	Hills; complex slopes averaging 10 meters in length with 50 percent grades; parent material is derived from granite and quartzite.	80
2.2 Rock outcrop	—	—	—	—	— cm m deg.C deg.C	—	20
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5					cm m deg.C deg.C		
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-86	cbvcl	32	45	70	30	20-25	30	15	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	58.5	6.7	16.7	23.7
											Hard	—	.10	% Veg. Ground Cover 0	55	30	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	45	10	20	25

3.2 Rock outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover —	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3753
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	700	—		
Forage	75			
Forage (maximum)	1000			
Timber	Site Index			
Ponderosa pine	—			
Fuelwood	cd/ac			
Pinyon/Juniper	8			
Potential for:	Rating			
Revegetation	Severe			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Too steep			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T	—		
Juniperus osteosperma	Juos	10	—		
Pinus monophylla	Pimo	10	—		
Quercus arizonica	Quar	T	—		
Quercus emoryii	Quem	5	—		
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Gramminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Management Implications:

6.1 Rock content and steep slopes restrict most management activities.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-F
2550-7
01/07/8

1.0 Date: 08/20/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3760 - Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, gravelly loam: Juos/Juer/Prve/Qutu2, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 600 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp
2.1 Typic Haplustalfs, --- fine-loamy, mixed, thermic	deep gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 cm / 1400 m / 15 deg.C / 18 deg.C	Elevated plains; complex slopes averaging 30 meters in length and 5 percent grades; parent material is from mixed sources.	8
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Haplustalfs, --- fine, mixed, thermic	--- --- --- ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1400 m / 15 deg.C / 18 deg.C	Elevated plains; complex slopes averaging 30 meters in length and 5 percent grades; parent material is from mixed sources.	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	cl	34	5	15	85	60-70	30	15	CL	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	6.1	6.7	2.6	2.5
											---	---	.20	% Veg. Ground Cover 0	0	20	20
Management Implications: ---											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											---	---	.8	20	10	10	60

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
Management Implications:											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3760
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	---			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	high			
Reforestation	---			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	---			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	---			
Windthrow	---			
Plant Competition	---			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2	T			
Aristida	ARIST	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin	T			
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 08/20/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3761 - Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, very gravelly loam: Juos/Juer/Prve/Qutu2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep to steep hills. Mean annual precipitation ranges from 40 to 50 centimeters; mean annual air temperature ranges from 15 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 20 centimeters. The freeze free period is 210 days. Elevations range from 1100 to 1400 meters. Delineations are irregular in shape and vary in size from 5 to 600 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit. Ephemeral streams are present within the map unit.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, --- fine-loamy, mixed, thermic	--- v.gravelly loam ---	LSM 4 -1	Juos/Juer/ Prve/Qutu2	Edaphic	48 / 1400 / 15 / 18	Hills; complex convex slopes averaging 20 meters in length and 35 percent grades; parent material is from mixed sources.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					/ m / deg.C / deg..		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cl	34	5	15	85	60-70	30	15	CL	Low	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	47.4	6.7	24.5	20.5
											Hard.	Kind	K	% Veg. Ground Cover			
											---	---	.10	0	50	15	20

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	.8	70	5	10	15

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3761
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	650			
Forage	150			
Forage (maximum)	800			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Juniper	1			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Moderate			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Used			
Pinyon Mouse	Used			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.H.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus erythrocarpa	Juer	5			
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	5			
Shrubs:					
Acacia greggii	Acgr	T			
Agave	AGAVE	T			
Baccharis pteronioides	Bapt	.1			
Berberis haematocarpa	Beha	3			
Cercocarpus montana	Cemo2	1			
Dasylirion wheeleri1	Dawh2	2			
Krameria parvifolia	Krpa	2			
Mimosa biuncifera	Mibi3	2			
Nolina microcarpa	Nomi	2			
Opuntia engelmanii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	3			
Quercus turbinella	Qutu2	6			
Rhus trilobata	Rhtr	T			
Yucca baccata	Yuba	2			
Yucca elata	Yuel	1			
Forbs:					
Erioconum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Haplopappus	HAPLO2	T			
Graminoids:					
Andropogon barbinodis	Anba	.1			
Andropogon saccharoides	Ansa	T			
Andropogon scoparius	Ansc2				
Aristida	ARIS	.5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua eriopoda	Boer4	.1			
Bouteloua hirsuta	Bohi2	1			
Eragrostis intermedia	Erin				
Hilaria belangeri	Hibe	3			
Hilaria mutica	Himu2	T			
Koeleria cristata	Kocr	T			
Lycurus phleoides	Lyph	.5			
Muhlenbergia porteri	Mupo	.7			
Sitanion hystrix	Sihy	.5			
Tridens mutica	Trmu	.5			

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects and moisture distrubution favors cool season growth. Plant competition from turbinella oak and catclaw should be expected.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-F.
2550-7
01/07/8.

1.0 Date: 9/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3770 - Typic Ustochrepts, LSM, 4, 0, calcareous, loamy-skeletal, mixed, mesic, very gravelly loam: Pimo/Juos/Qutu2/Arpu5/Caho3 - Typic Ustochrepts, LSM, 4, -1, calcareous, loamy-skeletal, mixed, thermic, very gravelly loam: Juos/Juer/Prve/Qutu2/Caho3 association, 15-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an aspect controlled association. TEC.1 occurs on moderately steep to steep complex hills on north aspects and TEC.2 occurs on moderately steep to steep complex hills with south aspects. Both TEC's are bounded by elevated plains. Mean annual precipitation ranges from 45 to 55 centimeters; mean annual air temperature ranges from 15 to 16 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 30 centimeters. The freeze free period is 200 days on TEC .1 and 210 days on TEC .2. Elevations range from 900 meters on north aspects to 1500 meters on south aspects. Delineations are irregular in shape and vary in size from 40 to 500 hectares. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Kap Com %
2.1 Typic Ustochrepts, calcareous, loamy-skel., mixed, mesic	--- / v.gravelly loam / ---	LSM 4 0	Pimo/Juos/Qutu2/Arpu5/Caho3	Edaphic	50 cm / 1500 m / 15 deg.C / 17 deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 25 percent; parent material is derived from carbonate enriched mixed sources.	60
2.2 Typic Ustochrepts, calcareous, loamy-skel., mixed, mesic	--- / v.gravelly loam / ---	LSM 4 -1	Juos/Juer/Prve/Qutu2/Caho3	Edaphic	50 cm / 1700 m / 16 deg.C / 18 deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 25 percent; parent material is derived from carbonate enriched mixed sources.	40
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, 0, calcareous, loamy-skeletal, mixed, mesic, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-76	grvl	18	10	50	50	30-40	20	15	GM	Low	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	19.3	6.7	14.6	7.8
											Hard.	Kind	K	% Veg. Ground Cover			
											---	---	.10	0	30	5	20

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	1	45	5	0	5

3.2 Typic Ustochrepts, LSM, 4, -1, calcareous, loamy-skeletal, mixed, thermic, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grvl	32	20	45	55	35-50	30	15	SC	Low	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	19.3	6.7	14.9	8.3
											Hard.	Kind	K	% Veg. Ground Cover			
											---	---	.10	0	30	5	2[illegible]

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	2	50	5	0	45

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3770
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	700	600		
Forage	50	50		
Forage (maximum)	200	150		
Timber	Site Index			
Ponderosa pine	—	—		
Fuelwood	cd/ac			
Pinyon/juniper	4	.5		
Potential for:	Rating			
Revegetation (drill)	Low	Low		
	Too alkaline	Too alkaline		
Reforestation	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Fair		
	Too steep	Too steep		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Desert Cottontail	Important	Important		
Pinyon Jay	Important	Essential		
Gambel Quail	Important	Important		
Pinyon Mouse	Essential	Used		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Moderate	Moderate		
	Slope	Slope		
Trails	Moderate	Moderate		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Slight	Slight		
Management Problems:				
Erosion(Sheet & Rill)	Moderate	Moderate		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components	Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:						
	Juniperus erythrocarpa	Juer	A	5		
	Juniperus monosperma	Jumo	T	T		
	Juniperus osteosperma	Juos	8	5		
	Pinus monophylla	Pimo	5	—		
Shrubs:						
	Acacia greggii	Acgr	T	T		
	Arctostaphylos pungens	Arpu5	8	—		
	Baccharis pteronioides	Bapt	T	T		
	Canotia holacantha	Caho3	2	3		
	Cercocarpus montana	Cemo2	T	T		
	Cowania neomexicana stans.	Cones	1	T		
	Dasylirion wheeleri	Dawh2	1	2		
	Garrya wrightii	Gawr	T	T		
	Krameria parvifolia gland.	Krpag	T	2		
	Mimosa biuncifera	Mibi3	1	2		
	Nolina microcarpa	Nomi	T	T		
	Opuntia engelmannii	Open2	T	T		
	Prosopis velutina	Prve	A	3		
	Quercus turbinella	Qutu2	9	4		
	Rhamnus crocea illicifolia	Rhcr	T	T		
	Rhus ovata	Rhov	T	T		
	Rhus trilobata	Rhtr	T	T		
	Yucca baccata	Yuba	T	T		
	Yucca elata	Yuel	T	T		
	Yucca schottii	Yusc	T	T		
Forbs:						
	Eriogonum	ERIOG	1	1		
	Erodium cicutarium	Erci	T	T		
	Gutierrezia sarothrae	Gusa2	1	1		
Graminoids:						
	Andropogon barbinodis	Anba	T	T		
	Andropogon saccharoides	Ansa	T	T		
	Andropogon scoparius	Ansc2	T	T		
	Aristida	ARIST	.50	.50		
	Bouteloua curtipendula	Bocu2	.50	.50		
	Bouteloua eriopoda	Boer4	.50	.50		
	Bouteloua hirsuta	Bohi2	.50	.50		
	Hilaria belangeri	Hibe	T	T		
	Koeleria cristata	Kocr	T	T		
	Lycurus phleoides	Lyph	T	T		
	Muhlenbergia porteri	Mupo	T	T		
	Sitanion hystrix	Sihy	T	T		

6.0 Mangement Implications:

6.1 Rainfall is marginal for reseeding projects; moisture distribution favors cool season and carbonate content limits plant selection.

6.2 Rainfall is marginal for reseeding projects; moisture distribution favors cool season and carbonate content limits plant selection.

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4468 - Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly loam: Cugl/Pimo/Qutu2/Arpu5 - Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, moderately deep, gravelly loam: Cugl/Pimo/Qutu2/Arpu5 complex, 15-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate inseparable pattern on mountain slopes in old burn areas. Mean annual precipitation ranges from 45 to 55 centimeters; mean annual air temperature ranges from 15 to 16 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 30 centimeters. The freeze free period is 200 days. Elevations range from 1200 to 1500 meters, primarily on north aspects. Delineations are irregular in shape and vary in size from 40 to 200 hectares. Sheet, rill and gully erosion is conspicuous. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Lithic Ustochrepts, — loamy-skel., mixed, mesic	--- v.gravelly loam —	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-edaphic fire	50 cm 1500 m 15 deg.C 17 deg.C	Hills; complex slopes with an average length of 15 meters and a gradient of 30 percent; parent material is derived from mixed sources.	50
2.2 Typic Haplustalfs, — clayey-skel., mixed, mesic	mod. deep gravelly loam —	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-edaphic fire	50 cm 1500 m 15 deg.C 17 deg.C	Hills; complex slopes with an average length of 15 meters and a gradient of 30 percent; parent material is derived from mixed sources.	40
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock outcrop	—	—	—	—	— cm m deg.C deg.C	—	10
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
0-28	grvl	15	15	45	55	30-45	20	NP	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	32.0	4.5	5.3	12.9
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	—	.10	0	50	45	20

Management Implications: High ground cover is the result of litter damming.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	40	5	40	15

3.2 Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, moderately deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
23-64	cbvc	46	25	25	35	65	45-65	25	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	63.9	6.7	8.5	25.8
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	—	.20	0	55	50	20

Management Implications: Abnormally high ground cover is the result of litter damming.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	30	5	45	20

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4468
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500	700		
Forage	50	100		
Forage (maximum)	100	1200		
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	4	8		
Potential for:		Rating		
Revegetation (drill)	Low	Moderate		
	Too shallow	Too steep		
Reforestation	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Poor		
	Too steep	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Desert Cottontail	Important	Important		
Pinyon Jay	Important	Important		
Gambel Quail	Important	Important		
Pinyon Mouse	Essential	Essential		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Moderate	Severe		
	Slope	Low strength		
Trails	Moderate	Moderate		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Slight	Severe		
		Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Cupressus glabra	Cugl	10	15		
Juniperus monospermaa	Jumo	T	T		
Juniperus osteosperma	Juos	8	10		
Pinus monophylla	Pimo	5	5		
Shrubs:					
Acacia greggii	Acgr	T	T		
Arctostaphylos pungens	Arpu5	8	10		
Baccharis pteronioides	Bapt	T	10		
Canotia holacantha	Caho3	T	T		
Cercocarpus montana	Cemo2	5	3		
Cowania neomexicana stans.	Comes	T	T		
Dasylirion wheelerii	Dawh2	1	1		
Garrya wrightii	Gawr	T	1		
Krameria parvifolia gland.	Krpag	T	T		
Mimosa biuncifera	Mibi3	1	1		
Nolina microcarpa	Nomi	2	2		
Opuntia engelmannii	Open2	T	T		
Prosopis velutina	Prve	A	A		
Quercus turbinella	Qutu2	5	9		
Rhamnus crocea illicifolia	Rhcr	T	T		
Rhus ovata	Rhov	T	T		
Rhus trilobata	Rhtr	T	T		
Yucca baccata	Yuba	T	1		
Yucca elata	Yuel	T	1		
Yucca schottii	Yusc	T	1		
Forbs:					
Eriogonum	ERIOG	T	1		
Erodium cicutarium	Erci	T	T		
Gutierrezia sarothrae	Gusa2	T	T		
Graminoids:					
Andropogon barbinodis	Anba	T	T		
Andropogon saccharoides	Ansa	T	T		
Andropogon scoparius	Ansc2	T	T		
Aristida	ARIST	.50	.50		
Bouteloua curtipendula	Bocu2	.50	.50		
Bouteloua eriopoda	Boer4	.50	.50		
Bouteloua hirsuta	Bohi2	.50	.50		
Hilaria belangeri	Hibe	T	T		
Koeleria cristata	Kocr	T	T		
Lycurus phleoides	Lyph	T	T		
Muhlenbergia porteri	Mupo	T	T		
Sitanion hystrix	Sihy	T	T		

6.0 Mangement Implications:

6.1 This is a fire post-climax plant community; management objective should be to maintain slopes in a metastable state.

6.2 See 6.1 above

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4469 - Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, gravelly loam: Cugl/Pimo/Qutu2/Arpu5 - Typic Haplustalfs, LSM, 4, 0, loamy-skeletal, mixed, mesic, gravelly loam: Cugl/Pimo/Qutu2/Arpu5 complex, 40-80% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate inseparable pattern on mountain slopes in old burn areas. Mean annual precipitation ranges from 45 to 55 centimeters; mean annual air temperature ranges from 15 to 16 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 30 centimeters. The freeze free period is 200 days. Elevations range from 1200 to 1500 meters, primarily on north aspects. Delineations are irregular in shape and vary in size from 40 to 200 hectares. Sheet, rill and gully erosion is conspicuous. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	cm m deg.C deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Lithic Ustochrepts, — loamy-skel., mixed, mesic	--- gravelly loam —	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-edaphic fire	50 1500 15 17	cm m deg.C deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 50 percent; parent material is derived from mixed sources.	50
2.2 Typic Haplustalfs, — loamy-skel., mixed, mesic	--- gravelly loam —	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-edaphic fire	50 1500 15 17	cm m deg.C deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 50 percent; parent material is derived from mixed sources.	40
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5 Rock outcrop	—	—	—	—	—	cm m deg.C deg.C	—	10
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-46	cbxl	22	70	60	40	25-30	20	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	117.1	4.5	19.2	47.3
														% Veg. Ground Cover			
											Hard	—	.20	0	80	45	20

Management Implications: High ground cover is the result of litter damming.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	30	5	40	25

3.2 Typic Haplustalfs, LSM, 4, 0, loamy-skeletal, mixed, mesic, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cbvcl	34	55	40	60	40-50	30	15	SC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	117.1	6.7	15.7	47.3
														% Veg. Ground Cover			
											Hard	—	.20	0	65	50	20

Management Implications: Abnormally high ground cover is the result of litter damming.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	30	5	45	20

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4469
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500	700		
Forage	50	100		
Forage (maximum)	100	700		
Timber	Site Index			
Ponderosa pine	—	—		
Fuelwood	cd/ac			
Pinyon/juniper	4	8		
Potential for:	Rating			
Revegetation (drill)	Low	Severe		
	Too shallow	Too steep		
Reforestation	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Poor		
	Too steep	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Desert Cottontail	Important	Important		
Pinyon Jay	Important	Important		
Gambel Quail	Important	Important		
Pinyon Mouse	Essential	Essential		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Severe	Severe		
	Slope	Low strength		
Trails	Severe	Severe		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Slight	Severe		
		Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Cupressus glabra	Cugl	10	15		
Juniperus monospermaa	Jumo	T	T		
Juniperus osteosperma	Juos	8	10		
Pinus monophylla	Pimo	5	5		
Shrubs:					
Acacia greggii	Acgr	T	T		
Arctostaphylos pungens	Arpu5	8	10		
Baccharis pteronioides	Bapt	T	10		
Canotia holacantha	Caho3	T	T		
Cercocarpus montana	Cemo2	5	3		
Cowania neomexicana stans.	Comes	T	T		
Dasylirion wheeleri	Dawh2	1	1		
Garrya wrightii	Gawr	T	1		
Krameria parvifolia gland.	Krpag	T	T		
Mimosa biuncifera	Mibi3	1	1		
Nolina microcarpa	Nomi	2	2		
Opuntia engelmannii	Open2	T	T		
Prosopis velutina	Prve	A	A		
Quercus turbinella	Qutu2	5	9		
Rhamnus crocea illicifolia	Rhcr	T	T		
Rhus ovata	Rhov	T	T		
Rhus trilobata	Rhtr	T	T		
Yucca baccata	Yuba	T	1		
Yucca elata	Yuel	T	1		
Yucca schottii	Yusc	T	1		
Forbs:					
Eriogonum	ERIOG	T	1		
Erodium cicutarium	Erci	T	T		
Gutierrezia sarothrae	Gusa2	T	T		
Graminoids:					
Andropogon barbinodis	Anba	T	T		
Andropogon saccharoides	Ansa	T	T		
Andropogon scoparius	Ansc2	T	T		
Aristida	ARIST	.50	.50		
Bouteloua curtipendula	Bocu2	.50	.50		
Bouteloua eriopoda	Boer4	.50	.50		
Bouteloua hirsuta	Boh12	.50	.50		
Hilaria belangeri	Hibe	T	T		
Koeleria cristata	Kocr	T	T		
Lycurus phleoides	Lyph	T	T		
Muhlenbergia porteri	Mupo	T	T		
Sitanion hystrix	Sihy	T	T		

6.0 Mangement Implications:

6.1 This is a fire post-climax vegetative community; many slopes are active, where not stabilized by litter or rock cover. Slope stabilization may require structural improvement or terracing.

6.2 See 6.1 above

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5074 - Udic Haplustalfs, LSM, 5, -1, fine, montmorillonitic, mesic, deep, cobbly loam: Pipo/Pimo/Jude2/Quar/Bogr2 - Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, cobbly loam: Pimo/Jude2/Juos/Quar/Bogr2 association, 15-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an aspect controlled association. TEC.1 occurs on moderately steep to steep complex hills on north aspects and TEC.2 occurs on moderately steep to steep complex hills with south aspects. Both TEC's are bounded by elevated plains. Mean annual precipitation ranges from 55 to 60 centimeters; mean annual air temperature ranges from 12 to 14 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on TEC.1 from mid-December to March. This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 meters on north aspects to 1800 meters on south aspects. Delineations are irregular in shape and vary in size from 15 to 200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — fine, mont., mesic	deep cobbly loam —	LSM 5 -1	Pipo/Pimo/Jude2/Quar/Bogr2	Edaphic	58 cm / 1700 m / 11 deg.C / 15 deg.C	Hills; complex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from miscellaneous sources.	60
2.2 Typic Haplustalfs, — fine, mont, mesic	deep cobbly loam —	LSM 4 +1	Pimo/Jude2/Juos/Quar/Bogr2	Edaphic	58 cm / 1700 m / 13 deg.C / 16 deg.C	Hills; complex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from miscellaneous sources.	40
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, -1, fine, montmorillonitic, mesic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
8-58	cbc	58	25	25	75	50-75	60	35	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	59.4	6.7	11.7	5.2
											—	—	.20	% Veg. Ground Cover 0	55	40	60

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	35	30

3.2 Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	c	44	5	25	75	50-75	50	25	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	59.4	6.7	14.4	24.4
											—	—	.20	% Veg. Ground Cover 0	55	35	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	30	35

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5074
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	800	750		
Forage	50	50		
Forage (maximum)	2000	1600		
Timber	Site Index			
Ponderosa pine	55	—		
Fuelwood	cd/ac			
Pinyon/juniper	4	8		
Potential for:	Rating			
Revegetation (drill)	Low	Low		
	Too steep	Too steep		
Reforestation	Low	—		
	Too dry	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Low strength	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	Used	—		
Pinyon Jay	Important	Essential		
Gambel Quail	Important	Important		
Acorn Woodpecker	Essential	Important		
Steller's Jay	Essential	Essential		
Limitations For:				
Timber Harvest	Severe	—		
	Low strength	—		
Cutbank Stability	Severe	Severe		
	Low strength	Low strength		
Unsurfaced Roads	Severe	Severe		
	Shrink-swell	Shrink-swell		
Trails	Severe	Severe		
	Low strength	Low strength		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	Moderate	Moderate		
	Mudflow	Mudflow		
Windthrow	Severe	—		
	Low strength	—		
Plant Competition	Moderate	—		
	Jude2	—		
	Juos	—		
	Quar	—		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Juniperus deppeanna	Jude2	11	14		
Juniperus osteosperma	Juos	T	1		
Pinus monophylla	Pimo	4	21		
Pinus ponderosa	Pipo	30	—		
Quercus arizonica	Quar	4	2		
Shrubs:					
Arctostaphylos pringelii	Arpr	T	T		
Arctostaphylos pungens	Arpu5	T	T		
Baccharis pteronioides	Bapt	T	.10		
Cercocarpus montana	Cemo2	T	T		
Garrya wrightii	Gawr	T	T		
Molina microcarpa	Nomi	2	3		
Quercus turbinella	Qutu2	T	T		
Rhamnus crocea illicifolia	Rhcri	T	T		
Forbs:					
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa	2	2		
Psoralia tenuiflora	Pste3	1	4		
Graminoids:					
Agropyron smithii	Agsm	.50	.10		
Andropogon saccharoides	Ansa	—	.10		
Aristida	ARIST	.10	.10		
Bouteloua curtipendula	Bocu2	1	1		
Bouteloua gracilis	Bogr2	1	1		
Koeleria cristata	Kocr	T	.10		
Leptochloa dubia	Ledu	.20	.10		
Lycurus phleoides	Lyph	T	.10		
Muhlenbergia longiligula	Mulo	.50	.10		
Muhlenbergia montana	Mumo	.50	.10		
Panicum obtusum	Paob	1	1		
Poa fendleriana	Pofe	.20	.10		
Sitanion hystrix	Sihy	.50	1		

6.0 Mangement Implications:

6.1 Soil surface is best stabilized by litter. Removal of surface soil may initiate a soil churning process. Revegetation favors sod-forming grasses.

6.2 Removal of surface soil horizon may initiate a churning process; in this slope range, severe gullying would be a more likely effect than a vertic soil intergrade. Revegetation favors sod-forming grasses.

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5075 - Udic Haplustalfs, LSM, 5, -1, clayey-skeletal, mixed, mesic, deep, very cobbly loam: Pipo/Pimo/Jude2/Quar/Arpu5/Arpr - Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep, very cobbly sandy loam: Pimo/Jude2/Juos/Quar association, 15-80% slopes.

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an aspect controlled association. TEC.1 occurs on steep to very steep complex hills on north aspects and TEC.2 occurs on steep to very steep complex hills with south aspects. Both TEC's are bounded by elevated plains. Mean annual precipitation ranges from 55 to 60 centimeters; mean annual air temperature ranges from 12 to 14 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on TEC.1 from mid-December to March. This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 meters on north aspects to 1800 meters on south aspects. Delineations are irregular in shape and vary in size from 15 to 200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MT / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — clayey-skel.,mixed, mesic	deep v. cobbly loam —	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Arpu5/Arpr	Edaphic	58 cm 1700 m 11 deg.C 15 deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 40 percent; parent material is derived from miscellaneous sources.	60
2.2 Typic Haplustalfs, — clayey-skel.,mixed, mesic	deep v. cobbly sandy loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar	Edaphic	58 cm 1700 m 13 deg.C 16 deg.C	Hills; complex slopes with an average length of 10 meters and a gradient of 40 percent; parent material is derived from miscellaneous sources.	40
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5					cm m deg.C deg.C		
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, -1, clayey-skeletal, mixed, mesic, deep, very cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
13-63	grvc	47	20	50	50	40-50	40	25	GC	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	52.1	6.7	7.0	4.0
											—	—	.10	% Veg. Ground Cover 0	55	50	60

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	45	10	40	5

3.2 Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep, very cobbly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	grvc	43	15	65	35	20-35	35	20	GC	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	52.1	6.7	12.6	21.4
											—	—	.10	% Veg. Ground Cover 0	50	35	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	65	5	30	0

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5075
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	800	750		
Forage	50	50		
Forage (maximum)	2000	1600		
Timber	Site Index			
Ponderosa pine	55	—		
Fuelwood	cd/ac			
Pinyon/juniper	4	8		
Potential for:	Rating			
Revegetation (drill)	Low	Low		
	Too steep	Too steep		
Reforestation	Low	—		
	Too dry	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Low strength	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	Used	—		
Pinyon Jay	Important	Essential		
Gambel Quail	Important	Important		
Acorn Woodpecker	Essential	Important		
Steller's Jay	Essential	Essential		
Limitations For:				
Timber Harvest	Severe	—		
	Low strength	—		
Cutbank Stability	Severe	Severe		
	Low strength	Low strength		
Unsurfaced Roads	Moderate	Severe		
	Too cobbly	Slope		
Trails	Severe	Severe		
	Low strength	Low strength		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	Moderate	Severe		
	Mudflow	Slump		
Windthrow	Severe	—		
	Low strength	—		
Plant Competition	Moderate	—		
	Jude2	—		
	Juos	—		
	Quar	—		
	Outu2	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeanna	Jude2	11	14		
Juniperus osteosperma	Juos	T	1		
Pinus monophylla	Pimo	4	21		
Pinus ponderosa	Pipo	30	—		
Quercus arizonica	Quar	4	2		
Quercus emoryii	Quem	1	2		
Shrubs:					
Arctostaphylos pringelii	Arpr	3	T		
Arctostaphylos pungens	Arpu5	12	15		
Baccharis pteronioides	Bapt	T	10		
Cercocarpus montana	Cemo2	3	3		
Garrya wrightii	Gawr	1	2		
Nolina microcarpa	Nomi	2	3		
Quercus turbinella	Qutu2	4	12		
Rhamnus crocea illicifolia	Rhcri	T	T		
Forbs:					
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa	1	1		
Psoralia tenuiflora	Pste3	1	T		
Graminoids:					
Agropyron smithii	Agsm	.50	.10		
Andropogon saccharoides	Ansa	—	.10		
Aristida	ARIST	.10	.10		
Bouteloua curtipendula	Bocu2	1	1		
Bouteloua gracilis	Bogr2	1	1		
Koeleria cristata	Kocr	T	.10		
Leptochloa dubia	Ledu	.20	.10		
Lycurus phleoides	Lyph	—	.10		
Muhlenbergia longiligula	Mulo	.50	.10		
Muhlenbergia montana	Mumo	.50	.10		
Panicum obtusum	Paob	T	T		
Poa fendleriana	Pofe	.20	.10		
Sitanion hystrix	Sihy	.50	1		

6.0 Management Implications:

6.1 Soil surface is best stabilized by litter. North aspects show evidence of mass failure in the past on slopes over 60%. Stair-stepping may be needed on active slopes.

6.2 Revegetation is restricted by slopes and rock content, but may respond to broadcast seeding. Slope stabilization may require stair-stepping in critical situations.

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5078 - Mollic Eutroboralfs, LSC, 5, 0, fine, mixed, deep, loam: Pipo/Quga, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 7 to 9 degrees Celsius. Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (LSC). Patchy snow cover normally exists on this map unit from November to mid-March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 35 centimeters. The freeze free period is 100 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 300 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	cm m deg.C deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Mollic Eutroboralfs, —— fine, mixed	deep —— loam ——	LSC 5 0	Pipo/Quga	Edaphic	65 2200 6 12	cm m deg.C deg.C	Elevated plains; simple convex slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from sandstone and shale.	85
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5 Lithic Eutroboralfs, —— clayey-skel., mixed	—— stony loam ——	LSC 5 0	Pipo/Quga	Edaphic	56 2200 6 12	cm m deg.C deg.C	Elevated plains; simple convex slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from sandstone and shale.	15
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Mollic Eutroboralfs, LSC, 5, 0, fine, mixed, deep, loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
41-81	grcl	36	10	45	55	35-50	30	15	SC	Mod.	——	——	——	Rate - t/ha/yr			
											Bedrock		Factor	13.2	6.7	.4	.3
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	ss,shl	.37	0	5	80	85

Management Implications: Roads and skid trails should include good drainage and sub-grade ammendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion determent.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
——	——	3	10	10	70	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5078
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	250			
Forage (maximum)	2500			
Timber		Site Index		
Ponderosa Pine	70			
Fuelwood	—	cd/ac		
Potential for:		Rating		
Revegetation	High			
Reforestation	High			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Shrink-swell			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Elk	Essential			
Lewis Woodpecker	Essential			
Limitations For:				
Timber Harvest	Moderate			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Slight			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	T			
Pinus Ponderosa	Pipo	65			
Quercus gambellii	Ouga	1			
Shrubs:					
Ceanothus fendleri	Cefe	2			
Forbs:					
Achillea millefolium lan.	Acmil	5			
Pteridium aquilinium	Ptaq	T			
Verbascum thapsis	Veth	T			
Graminoids:					
Agropyron smithii	Agsm	T			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	T			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1			
Sitanion hystrix	Sihy	.50			

6.0 Management Implications:

6.1 Localized surface rock may limit reforestation on some sites.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5079 - Typic Eutroboralfs, LSC, 5, 0, clayey-skeletal, mixed, deep, loam: Pipo/Quga, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep mounatain slopes. Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 7 to 9 degrees Celsius. Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (LSC). Patchy snow cover normally exists on this map unit from November to mid-March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 35 centimeters. The freeze free period is 100 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 300 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MT / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Eutroboralfs, clayey-skel., mixed	deep / loam	LSC / 5 / 0	Pipo/Quga	Edaphic	65 cm / 2300 m / 6 deg.C / 12 deg.C	Mountains; complex convex slopes averaging 15 meters in length and a gradient of 20 percent; parent material is derived from sandstone and shale	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Lithic Eutroboralfs, clayey-skel., mixed	stony loam	LSC / 5 / 0	Pipo/Quga	Edaphic	56 cm / 2200 m / 6 deg.C / 12 deg.C	Mountains; complex slopes averaging 15 meters in length and a gradient of 20 percent; parent material is derived from sandstone and shale.	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Eutroboralfs, LSC, 5, 0, clayey-skeletal, mixed, deep, loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
28-78	grvc	55	0	60	40	30-35	60	35	GC	High	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	87.0	6.7	.7	1.9
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	ss,sh	.37	0	65	80	85

Management Implications: Roads and skid trails should include good drainage and sub-grade ammendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion deterrent.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	3	10	10	70	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5079
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Foreseable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	250			
Forage (maximum)	2500			
Timber		Site Index		
Ponderosa Pine	70			
Fuelwood	—	cd/ac		
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Shrink-swell			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Elk	Essential			
Lewis Woodpecker	Essential			
Limitations For:				
Timber Harvest	Moderate			
	Low strength			
Cutbank Stability	Moderate			
	Low strength			
Unsurfaced Roads	Moderate			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Moderate			
	Slump			
Windthrow	Slight			
Plant Competition	Moderate			
	Ouga			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	T			
Pinus Ponderosa	Pipo	65			
Quercus gambellii	Ouga	1			
Shrubs:					
Ceanothus fendleri	Cefe	2			
Forbs:					
Achillea millefolium lan.	Acmil	5			
Pteridium aquilinum	Ptaq	T			
Verbascum thapsis	Veth	T			
Graminoids:					
Agropyron smithii	Agsm	T			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	T			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	T			
Sitanion hystrix	Sihy	.50			

6.0 Management Implications:

6.1 Localized surface rock may limit reforestation on some sites.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5080 - Typic Eutroboralfs, LSC, 5, 0, clayey-skeletal, mixed, deep, very gravelly loam: Pipo/Ouga, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep mountain slopes. Mean annual precipitation ranges from 55 to 65 centimeters, mean annual air temperature ranges from 7 to 9 degrees Celsius. Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (LSC). Patchy snow cover normally exists on this map unit from November to mid-March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 35 centimeters. The freeze free period is 100 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 300 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Eutroboralfs, — clayey-skel., mixed	deep v.gravelly loam —	LSC 5 0	Pipo/Ouga	Edaphic	65 cm 2300 m 6 deg.C 12 deg.C	Mountains; complex convex slopes averaging 10 meters in length and a gradient of 60 percent; parent material is derived from sandstone and shale	90
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock outcrop	—	—	—	—	— cm m deg.C deg.C	—	10
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Eutroboralfs, LSC, 5, 0, clayey-skeletal, mixed, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
48-97	grvcl	36	35	70	30	20-25	40	15	GC	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	109.	6.7	3.3	2.4
											Hard	ss,sh	.10	% Veg. Ground Cover 0	70	80	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	10	10	70	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5080.
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	250			
Forage (maximum)	1000			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	—	cd/ac		
Potential for:	Rating			
Revegetation	Severe			
	Too steep			
Reforestation	Severe			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Severe			
	Shrink-swell			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Elk	Essential			
Lewis Woodpecker	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Curbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Severe			
	Slump			
Windthrow	Slight			
Plant Competition	Severe			
	Ouga			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus deppeana	Jude2	T			
Pinus Ponderosa	Pipo	65			
Quercus gambellii	Ouga	1			
Shrubs:					
Ceanothus fendleri	Cefe	2			
Forbs:					
Achillea millefolium lan.	Acmil	5			
Pteridium aquilinium	Ptaq	T			
Verbascum thapsis	Veth	T			
Graminoids:					
Agropyron smithii	Agsm	T			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	T			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1			
Sitanion hystrix	Sihy	.50			

6.0 Management Implications:

6.1 Steep slopes and slumping hazard limit most activities. Cable logging sites will require structural improvements to limit erosion.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-2550-01/07/

1.0 Date: 09/11/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 3821 - Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, deep, very gravelly loam: Pimo/Juos/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 15 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm ME m MAST deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.
2.1 Typic Haplustalfs, —— clayey-skel., mixed, mesic	deep v.gravelly loam ——	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg..	Hills; complex slopes averaging 15 meters in length with 30 percent grades; parent material is derived from mixed sources.
2.2					cm m deg.C deg.C	
2.3					cm m deg.C deg.C	
2.4					cm m deg.C deg.C	
2.5 Typic Haplustalfs, —— fine, mixed, mesic	—— —— —— ——	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg..	Hills; complex slopes averaging 15 meters in length with 30 percent grades; parent material is derived from mixed sources.
2.6 Typic Haplustalfs, —— loamy-skel., mixed, mesic	—— —— —— ——	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5	Edaphic	52 cm 1500 m 14 deg.C 17 deg..	Hills; complex slopes averaging 15 meters in length with 30 percent grades; parent material is derived from mixed sources.

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell Mod.	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.
20-70	chvc	49	25	40	60	45-55	40	30	CL		——	——	——	Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K	32.0	6.7	6.3
											——	——	.10	% Veg. Ground Cover		
														0	40	40

Management Implications: ——

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.
——	——	1	55	35	5

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
														% Veg. Ground Cover		

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
														% Veg. Ground Cover		

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
														% Veg. Ground Cover		

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp RF >2mm	Veg. BA	Lit.

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3821
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	8			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	15			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Mangement Implications:

6.1 Sub-surface rock content interferes with site preparation. Aerial or broadcast seeding should be more successful if seasonal moisture patterns are observed.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/11/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 3822 - Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, very cobbly loam: Pimo/Juos/Qutu2/Arpu5, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep complex hills. Mean annual precipitation ranges from 46 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 30 centimeters. The freeze free period is 200 days. Elevations range from 1300 to 1600 meters. Delineations are irregular in shape and vary in size from 15 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, clayey-skel., mixed, mesic	deep v.cobbly loam	LSM 4 0	Pimo/Juos/Qutu2/Arpu5	Edaphic	52 / 1500 / 14 / 17	Hills; complex slopes averaging 10 meters in length with a gradient of 40 percent; parent material is derived from mixed sources.	90
2.2							
2.3							
2.4							
2.5 Rock Outcrop	—	—	—	—	—	—	10
2.6							

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, 0, clayey-skeletal, mixed, mesic, very cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
8-58	cbvc	40	25	40	60	45-55	40	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	41.5	6.7	16.8	16.8
											—	—	.10	% Veg. Ground Cover 0	45	20	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	40	10	10	40

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 3822
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700			
Forage	100			
Forage (maximum)	1000			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	6			
Potential for:		Rating		
Revegetation	Low			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Desert Cottontail	Important			
Gambel Quail	Important			
B.T. Gray Warbler	Essential			
Pinyon Jay	Essential			
Pinyon Mouse	Essential			
Plain Titmouse	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Moderate			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T			
Juniperus osteosperma	Juos	10			
Pinus monophylla	Pimo	15			
Quercus arizonica	Quar	T			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pungens	Arpu5	10			
Baccharis pteronioides	Bapt	1			
Berberis haematocarpa	Beha	1			
Dasylirion wheeleri	Dawh2	1			
Mimosa biuncifera	Mibi3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	9			
Yucca baccata	Yuba	1			
Yucca elata	Yuel	1			
Forbs:					
Eriogonum	ERIOG	1			
Gutierrezia sarothrae	Gusa2	T			
Graminoids:					
Agropyron smithii	Agsm	1			
Andropogon barbinodis	Anba	1			
Aristida	ARIST	5			
Bouteloua curtipendula	Bocu2	3			
Bouteloua hirsuta	Bohi2	1			
Hilaria belangerii	Hibe	3			
Koelaria kristata	Kocr	10			
Lycurus phleoides	Lyph	50			
Muhlenbergia porteri	Mupo	50			
Panicum obtusum	Paob	T			
Sitanion hystrix	Sihy	50			
Tridens mutica	Trmu	50			

6.0 Management Implications:

6.1 Steep slopes and rock content preclude most management activities. Aerial and broadcast seeding may be successful if moisture distribution patterns are observed.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/12/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4061 - Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, very gravelly loam: Bogr2/Jude2, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on strongly sloping complex hills. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 600 hectares. Sheet and rill erosion is conspicuous. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Co.
2.1 Typic Haplustalfs, — fine, mont., mesic	deep v.gravelly loam —	LSM 4 +1	Bogr2/Jude2	Zoo-topo-edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Hills; complex convex slopes with an average length of 15 meters and a gradient of 25 percent parent material is derived from old alluvium.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Haplustalfs, — clayey-skel., mont., mesic	— — — —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Hills; complex convex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from old alluvium.	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
18-68	c	49	0	5	95	75-90	55	30	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	23.7	6.7	12.5	9.7
											—	—	.10	% Veg. Ground Cover 0	35	15	25

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	55	10	5	30

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4061
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	250			
Forage	50			
Forage (maximum)	1600			
Timber	Site Index			
Ponderosa Pine	—			
Fuelwood	cd/ac			
Pinyon/Juniper	—			
Potential for:	Rating			
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:	—			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	Moderate			
	Mudflow			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	10			
Pinus monophylla	Pimo	T			
Quercus arizonica	Quar	T			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	T			
Nolina Microcarpa	Nomi	1			
Quercus turbinella	Qutu2	T			
Forbs:					
Baccharis pteroniodes	Bapt	3			
Psoralia tenuiflora	Pste3	3			
Gutierrazia sarothrae	Gusa2	1			
Graminoids:					
Agropyron smithii	Agsm	T			
Andropogon saccharoides	Ansa	T			
Aristida	ARIST	10			
Bouteloua curtipendula	Bocu2	50			
Bouteloua hirsuta	Bohi2	1			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	T			
Lycurus phleoides	Lyph	T			
Muhlenbergia longiligula	Mulo	T			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	T			
Sitanion hystrix	Sihy	T			

6.0 Mangement Implications:

6.1 This map unit has been severely degraded as a result of mechanized juniper control. Primary management should be on erosion control. Expanding lattice clays on these slopes will usually headcut and form huge gullies instead becoming vertic.

6.2

6.3

6.4

Notes:

#4140

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/23/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4140 - Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, gravelly loam: Bogr2/Jude2 - Vertic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep, gravelly clay loam: Paob/Bogr2/Jude2 complex, 0-15% slopes

This map unit consists of two terrestrial ecosystem components, which occur in an intricate pattern and are not separable. TEC.1 occurs on gently sloping to rolling elevated plains, while TEC.2 occurs as a degraded soil on gently sloping to nearly level elevated plains. Mean annual precipitation ranges from 50 to 56 centimeters; mean annual air temperature ranges from 13 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1400 to 1700 meters. Delineations are irregular in shape and vary in size from 10 to 1200 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Typic Haplustalfs, — fine, mont. mesic	deep gravelly loam —	LSM 4 +1	Bogr2/Jude2	Zoo-topo-edaphic	56 / 1600 / 13 / 16	Elevated plains; complex slopes with average length of 10 meters and gradient of 5 percent; parent material is old alluvium and residuum from mixed sources.	60
2.2 Vertic Haplustalfs, — fine, mont., mesic	deep gravelly clay loam —	LSM 4 +1	Paob/Bogr2/Jude2	Zoo-topo-edaphic	56 / 1600 / 13 / 16	Elevated plains; concaved slopes with average length of 10 meters and gradient of 5 percent; parent material is old alluvium and residuum from mixed sources.	40
2.3							
2.4							
2.5							
2.6							

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
41-91	c	49	0	10	90	70-85	55	30	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock			3.5	6.7	1.4	1.4
											Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	.20	0	0	20	20

Management Implications: These soils are in the first stages of degradation to the Vertic subgroup. Management emphasis should be placed on preventing initiation of the churning process.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	15	50

3.2 Vertic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, deep gravelly clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	cbc	46	20	10	90	70-85	50	25	CL	High	—	—	—	Rate - t/ha/yr			
											Bedrock			2.6	2.2	.9	.9
											Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	.15	0	5	20	20

Management Implications: This soil has begun to form a Vertisol. Management emphasis should be on soil stabilization.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	30	5	15	50

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4140
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600	100		
Forage	50	50		
Forage (maximum)	1600	800		
Timber		Site Index		
Ponderosa pine	—	—		
Fuelwood		cd/ac		
Pinyon/juniper	3	—		
Potential for:		Rating		
Revegetation	High	Low		
		Too clayey		
Reforestation	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Low strength	Low strength		
Wildlife Habitat Suit:				
Pinyon Jay	Important	Important		
Plain Titmouse	Important	Important		
Pinyon Mouse	Important	Important		
B.T. Gray Warbler	Essential	Essential		
Mule Deer	Important	Important		
Gambel Quail	Important	Used		
Desert Cottontail	Important	Important		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Poor	Poor		
	Low strength	Low strength		
Unsurfaced Roads	Poor	Poor		
	Low strength	Low strength		
Trails	Severe	Severe		
	Low strength	Low strength		
Campgrounds	Moderate	Severe		
	Too clayey	Too clayey		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Slight	Moderate		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	8	2		
Juniperus osteosperma	Juos	1	T		
Pinus monophylla	Pimo	1	—		
Quercus Arizonica	Quar	1	—		
Shrubs:					
Agave	AGAVE	T	—		
Baccharis pteronioides	Bapt2	.1	.1		
Mimosa biuncifera	Mibi3	T	T		
Nolina microcarpa	Nomi	2	2		
Opuntia spinosior	Opsp	.1	.2		
Forbs:					
Astralagus	ASTRA	T	1		
Eriogonum	ERIOG	1	T		
Erodium cicutarium	Erci	T	1		
Gutierrezia sarothrae	Gusa2	5	5		
Helianthus annuus	Hean3	T	5		
Psoralia tenuiflora	Psta3	15	10		
Graminoids:					
Agropyron smithii	Agsm	.1	T		
Andropogon saccharoides	Ansa	.1	T		
Andropogon scoparius	Ansc2	.1	T		
Aristida	ARIST	.1	T		
Bouteloua curtipendula	Bocu2	1	.1		
Bouteloua eriopoda	Boer4	T	—		
Bouteloua gracilis	Bogr2	5	2		
Bouteloua hirsuta	Boh12	2	1		
Koeleria cristata	Kocr2	.1	.1		
Leptochloa dubia	Ledu	.1	—		
Lycurus phleoides	Lyph	.1	T		
Muhlenbergia longiligula	Mulo	.1	T		
Muhlenbergia montana	Mumo	.1	T		
Panicum obtusum	Paob	1	5		
Poa fendleriana	Pofe	.1	T		
Sitanion hystrix	Sihy	1	.1		
Trichachne californica	Trca2	T	T		

6.0 Management Implications:

6.1 Loss of the soil surface can lead to development of the Vertic subgroup associated with this unit.

6.2 This soil is easily identified by the deep wide cracks and piping visible in the dry season. The Vertic subgroup was formed in old juniper push areas after the surface soil eroded away. Reclamation may be attempted by seeding sod-forming grasses and forbs, either by aerial seeding or very light surface tillage.

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4161 - Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, moderately deep, very gravelly loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on strongly sloping complex hills. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. This map unit is characterized by a dendritic drainage pattern. Delineations are irregular in shape and vary in size from 5 to 1500 hectares.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, — fine, mont., mesic	mod. deep v.gravelly loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Hills; complex convex slopes with an average length of 15 meters and a gradient of 25 percent parent material is derived from basalt.	90
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Typic Haplustalfs, — clayey-skel., mont., mesic	— — — —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Hills; complex convex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from basalt.	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, montmorillonitic, mesic, moderately deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
15-65	grc	47	5	30	70	50-65	50	25	CL	High	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	23.7	6.7	9.7	9.7
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	bas	.10	0	30	25	25

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	45	20	5	30

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4161
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	750			
Forage	50			
Forage (maximum)	1600			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	10			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
B.T. Gray Warbler	Essential			
Pinyon Mouse	Important			
Pinyon Jay	Important			
Desert Cottontail	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	14			
Pinus monophylla	Pimo	21			
Quercus arizonica	Quar	2			
Quercus emoryii	Quem	T			
Juniperus osteosperma	Juos	1			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	10			
Nolina Microcarpa	Nomi	3			
Quercus turbinella	Qutu2	6			
Forbs:					
Eriogonum	ERIOG	1			
Psoralia tenuiflora	Pste3	T			
Gutierrezia sarothrae	Gusa2	1			
Graminoids:					
Agropyron smithii	Agsm	10			
Andropogon saccharoides	Ansa	10			
Aristida	ARIST	10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua hirsuta	Bohi2	1			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	10			
Leptochloa dubia	Ledu	10			
Lycurus phleoides	Lyph	10			
Muhlenbergia longiligula	Mulo	10			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	10			
Sitanion hystrix	Sihy	1			

6.0 Management Implications:

6.1 Basalt derived soils and high clay content favor sod-forming grasses. Soil moisture content is critical for mechanical seeding due to high compaction potential.

6.2

6.3

6.4

Notes:

#4170 & ~~#4175~~

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 4170 - Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, gravelly loam: Pimo/Jude2/Juos, 0-15% slopes

Qua/Qutu2

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters. Delineations are irregular in shape and vary in size from 5 to 1500 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / WE / MAST / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, fine, mixed, mesic	gravelly loam	LSM 4 +1	Pimo/Jude2/ Juos	Edaphic	56 / 1600 / 13 / 16	cm / m / deg.C / deg.C	Elevated plains; simple convex slopes, average length of 20 meters and a gradient of 5 percent; parent material is derived from diabase and mixed metamorphic rock.	60
2.2						cm / m / deg.C / deg.C		
2.3						cm / m / deg.C / deg.C		
2.4						cm / m / deg.C / deg.C		
2.5 Lithic Haplustalfs, clayey-skel., mixed, mesic		LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 / 1600 / 13 / 16	cm / m / deg.C / deg.C	Elevated plains; simple convex slopes, average length of 20 meters and a gradient of 5 percent; parent material is derived from diabase and mixed metamorphic rock.	
2.6 Typic Haplustalfs, clayey-skel., mixed, mesic		LSM 4 +1	Pimo/Jude2/ Juos/Quar Qutu2/Arpu5	Edaphic	56 / 1600 / 13 / 16	cm / m / deg.C / deg.C	Elevated plains; simple convex slopes, average length of 20 meters and a gradient of 5 percent; parent material is derived from diabase and mixed metamorphic rock.	10

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, moderately deep, very gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	stcl	39	30	15	85	60-70	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	5.0	6.7	2.0	2.0
											—	—	.20	% Veg. Ground Cover			
														0	0	45	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	35	10	35	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4170
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody.	750			
Forage	50			
Forage (maximum)	1600			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	10			
Potential for:		Rating		
Revegetation	High			
Reforestation	—			
	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
B.T. Gray Warbler	Essential			
Pinyon Mouse	Important			
Pinyon Jay	Important			
Desert Cottontail	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
	—			
Campgrounds	Slight			
	(0-5% only)			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	14			
Pinus monophylla	Pimo	21			
Quercus arizonica	Quar	2			
Quercus emoryii	Quem	2			
Juniperus osteosperma	Juos	1			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	T			
Nolina Microcarpa	Nomi	3			
Quercus turbinella	Qutu2	T			
Forbs:					
Eriogonum	ERIOG	1			
Psoralia tenuiflora	Pste3	T			
Gutierrezia sarothrae	Gusa2	1			
Graminoids:					
Agropyron smithii	Agsm	.10			
Andropogon saccharoides	Ansa	.10			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua hirsuta	Bohi2	1			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	.10			
Leptochloa dubia	Ledu	.10			
Lycurus phleoides	Lyph	.10			
Muhlenbergia longiligula	Mulo	.10			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	.10			
Sitanion hystrix	Sihy	1			

6.0 Management Implications:

6.1 Management opportunities tend to be highly localized. Typical sites are on mesas with localized surface rock. Soil moisture content at time of seeding is a critical factor in site preparation. Sites in diabase formations may contain small amounts of sodium, which has a dispersing effect on soil particles.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4175 - Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep very cobbly loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steeply sloping complex hills. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 5 to 1500 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, clayey-skel., mixed, mesic	deep v.cobbly loam	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 / 1600 / 13 / 16 (cm / m / deg.C / deg.C)	Hills; complex convex slopes with an average length of 15 meters and a gradient of 30 percent parent material is derived from mixed sources.	85
2.2							
2.3							
2.4							
2.5 Rock Outcrop	—	—	—	—	—	—	15
2.6							

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep, very cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell
33-83	cbvcl	38	30	40	60	40-50	35	15	SC	Mod.

Soil Wetness: Depth —, Durat. —, Months —

Bedrock: Hard. —, Kind —

Factor K: .10

Erosion Class: Water —, Wind —

Organic Matter %: 2

Sheet/Rill Erosion Rate - t/ha/yr: Pot. 32.0, Tol. 6.7, Cur. 6.4, Nat. 13.2

% Veg. Ground Cover: 0

% Cur. Surface Comp.: RF >2mm 40, Veg. BA 5, Lit. 35, Soil 20

Management Implications:

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth, Durat., Months

Bedrock: Hard., Kind

Factor K

Erosion Class: Water, Wind

Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot., Tol., Cur., Nat.

% Veg. Ground Cover

% Cur. Surface Comp.: RF >2mm, Veg. BA, Lit., Soil

Management Implications:

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth, Durat., Months

Bedrock: Hard., Kind

Factor K

Erosion Class: Water, Wind

Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot., Tol., Cur., Nat.

% Veg. Ground Cover

% Cur. Surface Comp.: RF >2mm, Veg. BA, Lit., Soil

Management Implications:

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth, Durat., Months

Bedrock: Hard., Kind

Factor K

Erosion Class: Water, Wind

Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot., Tol., Cur., Nat.

% Veg. Ground Cover

% Cur. Surface Comp.: RF >2mm, Veg. BA, Lit., Soil

Management Implications:

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4175
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	750			
Forage	50			
Forage (maximum)	1600			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	16			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	—			
	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
B.T. Gray Warbler	Essential			
Pinyon Mouse	Important			
Pinyon Jay	Important			
Desert Cottontail	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Moderate			
	Low strength			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus deppeana	Jude2	14			
Pinus monophylla	Pimo	21			
Quercus arizonica	Quar	2			
Quercus emoryii	Quem	T			
Juniperus osteosperma	Juos	1			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	15			
Nolina Microcarpa	Nomi	3			
Quercus turbinella	Qutu2	12			
Forbs:					
Eriogonum	ERIOG	1			
Psoralia tenuiflora	Pste3	T			
Gutierrezia sarothrae	Gusa2	1			
Graminoids:					
Agropyron smithii	Agsm	10			
Andropogon saccharoides	Ansa	10			
Aristida	ARIST	10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua hirsuta	Bohi2	1			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	10			
Leptochloa dubia	Ledu	10			
Lycurus phleoides	Lyph	10			
Muhlenbergia longiligula	Mulo	10			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	10			
Sitanion hystrix	Sihy	1			

6.0 Management Implications:

6.1 Primary management limitation is rock content and slope class. Mechanical seeding and site preparation is limited to localized sites.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4176 - Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep, extremely cobbly loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep complex hills. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 5 to 1500 hectares. Sheet and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MF / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, clayey-skel., mixed, mesic	deep / ext.cobbly loam	LSM 4 +1	Pimo/Jude2/Juos/Quar/Qutu2/Arpu5	Edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Hills; complex convex slopes with an average length of 10 meters and a gradient of 50 percent parent material is derived from mixed sources.	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, clayey-skeletal, mixed, mesic, deep, extremely cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cbvcl	39	40	30	70	150-55	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	29.2	6.7	17.3	12.0
											—	—	.05	% Veg. Ground Cover 0	40	10	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	90	5	5	0

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4176
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	750			
Forage	50			
Forage (maximum)	1600			
Timber		Site Index		
Ponderosa Pine	—			
Fuelwood		cd/ac		
Pinyon/Juniper	16			
Potential for:		Rating		
Revegetation	Severe LOW			
	Too steep			
Reforestation	—			
	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
B.T. Gray Warbler	Essential			
Pinyon Mouse	Important			
Pinyon Jay	Important			
Desert Cottontail	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Severe			
	Too steep			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Erosion			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	14			
Pinus monophylla	Pimo	21			
Quercus arizonica	Quar	2			
Quercus emoryii	Quem	T			
Juniperus osteosperma	Juos	1			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	15			
Nolina Microcarpa	Nomi	3			
Quercus turbinella	Qutu2	12			
Forbs:					
Eriogonum	ERIOG	1			
Psoralia tenuiflora	Pste3	T			
Gutierrezia sarothrae	Gusa2	1			
Grammnoids:					
Agropyron smithii	Agsm	.10			
Andropogon saccharoides	Ansa	.10			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua hirsuta	Bohi2	1			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	.10			
Leptochloa dubia	Ledu	.10			
Lycurus phleoides	Lyph	.10			
Mulenbergia longiligula	Mulo	.10			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	.10			
Sitanion hystrix	Sihy	1			

6.0 Mangement Implications:

6.1 Primary management objective should be to maintain slope in a meta-stable state; steep slopes preclude most activities.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4240 - Typic Haplustalfs, LSM, 4, +1, loamy-skeletal, mixed, mesic, deep gravelly sandy loam, gullied: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep elevated plains. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 800 hectares. Gully and rill erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

Pedons do not match transects.
* Legend = Typic Ustochrepts

9 of 10 Pedon Inclusions Descriptions

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, * — loamy-skel., mixed, mesic	deep gravelly loam gullied	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm / 1600 m / 13 deg.C / 16 deg.C	Plains; complex gullied slopes with an average length of 15 meters and a gradient of 5 percent parent material is derived from mixed sources.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, loamy-skeletal, mixed, mesic, deep, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grvsl	7	0	60	40	10-15	10	5	GM	Low.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	3.2	6.7	.1	1.3
											—	—	.15	% Veg. Ground Cover 0	0	60	2

Management Implications: Abnormally high current ground cover is the result of overland flow and litter damming. Erosion is greatly accelerated where litter is not present.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	55	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4240
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	750			
Forage	50			
Forage (maximum)	1600			
Timber	Site Index			
Ponderosa Pine	—			
Fuelwood	cd/ac			
Pinyon/Juniper	16			
Potential for:	Rating			
Revegetation	High			
Reforestation	—			
	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Low gravelly			
Wildlife Habitat Suit:				
Mule Deer	Important			
B.T. Gray Warbler	Essential			
Pinyon Mouse	Important			
Pinyon Jay	Important			
Desert Cottontail	Important			
Gambel's Quail	Important			
Limitations For:				
Timber Harvest	—			
	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Slight			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:						
	Juniperus deppeana	Jude2	15			
	Pinus monophylla	Pimo	20			
	Quercus arizonica	Quar	2			
	Quercus emoryii	Quem	2			
	Juniperus osteosperma	Juos	1			
Shrubs:						
	Arctostaphylos pringelli	Arpr	T			
	Arctostaphylos pungens	Arpu5	15			
	Nolina Microcarpa	Nomi	3			
	Quercus turbinella	Qutu2	12			
Forbs:						
	Eriogonum	ERIOG	1			
	Psoralia tenuiflora	Pste3	T			
	Gutierrezia sarothrae	Gusa2	1			
Graminoids:						
	Agropyron smithii	Agsm	.10			
	Andropogon saccharoides	Ansa	.10			
	Aristida	ARIST	.10			
	Bouteloua curtipendula	Bocu2	1			
	Bouteloua hirsuta	Bohi2	1			
	Bouteloua gracilis	Bogr2	1			
	Koeleria cristata	Kocr	.10			
	Leptochloa dubia	Ledu	.10			
	Lycurus phleoides	Lyph	.10			
	Muhlenbergia longiligula	Mulo	.10			
	Panicum obtusum	Paob	1			
	Poa fendleriana	Pofe	.10			
	Sitanion hystrix	Sihy	1			

6.0 Mangement Implications:

6.1 Primary management emphasis should be on stabilizing the active gully systems within the map unit; structures may be needed. Reseeding potential is high, but localized surface rock and gullies may interfere with mechanical site preparation.

6.2

6.3

6.4

Notes:

4241

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4241 - Typic Haplustalfs, LSM, 4, +1, loamy-skeletal, mixed, mesic, sandy loam: Quar/Qutu2/Arpu5 - Lithic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, very gravelly sandy loam: Quar/Qutu2/Arpu5 complex, 15-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate pattern and are not separable. They occur on steep to very steep complex hills and mountains which show evidence of repeated burning in the past. Mean annual precipitation ranges from 50 to 60 centimeters; mean annual air temperature ranges from 12 to 15 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1400 to 1700 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 1500 hectares. Rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, loamy-skel., mixed, mesic	--- / gravelly sandy loam / ---	LSM 4 +1	Quem/Qutu2 Arpu5	Fire-edaphic	55 cm / 1600 m / 14 deg.C / 17 deg.C	Hills and Mountains; complex slopes averaging a length of 10 meters and a gradient of 25 percent parent material is derived from mixed sources.	60
2.2 Lithic Ustochrepts, loamy-skel., mixed, mesic	--- / v.gravelly sandy loam / ---	LSM 4 +1	Quem/Jude2/ Arpu5	Fire-edaphic	55 cm / 1600 m / 13 deg.C / 16 deg.C	Hills and mountains; complex slopes averaging a length of 10 meters and a gradient of 25 percent parent material is derived from mixed sources	10
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	---	---	---	---	--- cm / --- m / --- deg.C / --- deg.C	---	10
2.6					cm / m / deg.C / deg.C	Surface - GRV Fn2.1 K = .10	

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4,+1, loamy-skeletal, mixed, mesic, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
28-78	grvcl	34	30	55	45	30-40	30	15	GM	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	38.7	6.7	22.9	15.9
											---	---	.20	% Veg. Ground Cover 0	40	10	20

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	2	30	5	5	60

3.2 Lithic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
0-38.0	grvsl	16	5	80	20	5-10	20	15	GM	Low	---	---	---	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	19.3	6.7	11.4	8.0
											---	---	.10	% Veg. Ground Cover 0	25	10	20

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	---	65	5	5	25

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4241
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	750	600		
Forage	50	50		
Forage (maximum)	1600	600		
Timber	Site Index			
Ponderosa Pine	—	—		
Fuelwood	cd/ac			
Pinyon/Juniper	—	—		
Potential for:	Rating			
Revegetation	Moderate	Moderate		
	Too steep	Too steep		
Reforestation	—	—		
	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Poor		
	Too steep	Too shallow		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
B.T. Gray Warbler	Essential	Essential		
Pinyon Mouse	Important	Important		
Pinyon Jay	Important	Important		
Desert Cottontail	Important	Used		
Gambel's Quail	Important	Used		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Moderate	Moderate		
	Slope	Slope		
Trails	Moderate	Moderate		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Slight	Slight		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Moderate		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	2	2		
Pinus monophylla	Pimo	T	T		
Quercus arizonica	Quar	4	4		
Quercus emoryii	Quem	4	6		
Shrubs:					
Arctostaphylos pringelli	Arpr	5	2		
Arctostaphylos pungens	Arpu5	25	20		
Cercocarpus montana	Cemo2	8	10		
Quercus turbinella	Qutu2	15	12		
Rhamnus crocea illicifolia	Rhcri	5	5		
Rhus ovata	Rhov	2	T		
Rhus trilobata	Rhtr	1	1		
Yucca schottii	Yusc	T	T		
Forbs:					
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa2	3	3		
Graminoids:					
Andropogon scoparius	Ansc	.10	.10		
Aristida	ARIST	.10	.10		
Bouteloua curtipendula	Bocu2	1	.50		
Bouteloua hirsuta	Bohi2	1	.50		
Bouteloua gracilis	Bogr2	1	.50		
Koeleria cristata	Kocr	.10	.10		
Leptochloa dubia	Ledu	.10	.10		
Lycurus phleoides	Lyph	.10	.10		
Muhlenbergia longiligula	Mulo	.10	.10		
Muhlenbergia montana	Mumo	.10	.10		
Poa fendleriana	Pofe	.10	.10		
Sitanion hystrix	Sihy	1	.50		

6.0 Mangement Implications:

6.1 Primary management objective should be to maintain slope in a meta-stable state; steep slopes preclude most activities. Aerial reseeding may be successful in localized areas.

6.2 Same as 6.1

6.3

6.4

Notes:

#4240 #4457

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4242 - Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly sandy loam: Quem/Qutu2/Arpu5 - Typic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, very gravelly sandy loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5 complex, 40-80% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate pattern and are not separable. They occur on steep to very steep mountain slopes associated with rock formations. TEC .1 occurs on warm aspects and shows evidence of repeated burning. TEC .2 occurs on relatively undisturbed sites in the same landform.
Mean annual precipitation ranges from 50 to 60 centimeters; mean annual air temperature ranges from 12 to 15 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1400 to 1700 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 1500 hectares. Rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a parallel drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / ME m / MAST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Com %
2.1 Lithic Ustochrepts, — loamy-skel., mixed, mesic	— v.gravelly sandy loam —	LSM 4 0	Quem/Qutu2 Arpu5	Fire-edaphic	55 cm / 1600 m / 14 deg.C / 17 deg.C	Mountains; complex slopes with an average length of 10 meters and a gradient of 50 percent; parent material is derived from mixed sources.	50
2.2 Typic Ustochrepts, — loamy-skel., mixed, mesic	— v.gravelly sandy loam —	LSM 4 +1	Pimo/Jude2 Juos/Quar/ Qutu2/Arpu5	Edaphic	55 cm / 1600 m / 13 deg.C / 16 deg.C	Mountains; complex slopes with an average length of 10 meters and a gradient of 50 percent; parent material is derived from mixed sources	40
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / — m / — deg.C / — deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Lithic Ustochrepts, LSM, 4, 0, loamy-skeletal, mixed, mesic, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-48	gryl	26	15	65	35	20-30	25	10	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	58.5	4.5		24.1
											—	—	.10	% Veg. Ground Cover 0		15	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	40	5	10	45

3.2 Typic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	gryl	27	25	45	55	30-45	25	10	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	58.5	6.7	28.7	24.1
											—	—	.10	% Veg. Ground Cover 0	55	10	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	65	5	5	25

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4242
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600	750		
Forage	50	50		
Forage (maximum)	600	1000		
Timber		Site Index		
Ponderosa Pine	—	—		
Fuelwood		cd/ac		
Pinyon/Juniper	—	—		
Potential for:		Rating		
Revegetation	Severe	Severe		
	Too steep	Too steep		
Reforestation	—	—		
	—	—		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Too steep	Too steep		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
B.T. Gray Warbler	Essential	Essential		
Pinyon Mouse	Important	Important		
Pinyon Jay	Important	Important		
Desert Cottontail	Important	Used		
Gambel's Quail	Important	Used		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	Severe	Severe		
	Too steep	Too steep		
Unsurfaced Roads	Severe	Severe		
	Slope	Slope		
Trails	Severe	Severe		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Slight	Slight		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	—	14		
Pinus monophylla	Pimo	10	21		
Quercus arizonica	Quar	—	2		
Quercus emoryii	Quem	2	2		
Juniperus osteosperma	Juos	5	1		
Shrubs:					
Arctostaphylos pringelli	Arpr	—	T		
Arctostaphylos pungens	Arpu5	10	15		
Cercocarpus montana	Cemo2	30	3		
Quercus turbinella	Qutu2	15	12		
Rhamnus crocea illicifolia	Rhcri	1	T		
Rhus ovata	Rhov	10	T		
Rhus trilobata	Rhtr	10	T		
Yucca schottii	Yusc	10	T		
Forbs:					
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa2	2	1		
Graminoids:					
Agropyron smithii	Agsm	10	10		
Andropogon saccharoides	Ansa	T	10		
Aristida	ARIST	50	10		
Bouteloua curtipendula	Bocu2	3	2		
Bouteloua hirsuta	Bohi2	50	1		
Bouteloua gracilis	Bogr2	—	1		
Koeleria cristata	Kocr	10	10		
Leptochloa dubia	Ledu	—	10		
Lycurus phleoides	Lyph	50	10		
Muhlenbergia longiligula	Mulo	—	10		
Muhlenbergia montana	Mumo	T	10		
Poa fendleriana	Pofe	—	10		
Sitanion hystrix	Sihy	50	1		

6.0 Mangement Implications:

6.1 Primary management objective should be to maintain slope in a meta-stable state; steep slopes preclude most activities. Aerial reseeding may be successful in localized areas.

6.2 Same as 6.1

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-
01/07/8

1.0 Date: 9/12/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4451 - Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, moderately deep, very cobbly loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5 - Udic Haplustalfs, LSM, 5, -1, fine, mixed, mesic, moderately deep, gravelly loam: Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr complex, 0-15% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an inseparable pattern on elevated plains. TEC.1 occurs on gently sloping convex slopes with high runoff and TEC.2 occurs on concaved sites which receive and hold run-on water. Both TEC's are bounded by descending mountain slopes. Mean annual precipitation ranges from 55 to 60 centimeters; mean annual air temperature ranges from 12 to 14 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 20 to 100 hectares. Sheet and rill erosion is conspicuous. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, — fine, mixed, mesic	mod. deep v.cobbly loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	58 cm 1700 m 11 deg.C 15 deg.C	Plains;complex slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from miscellaneous sources.	70
2.2 Udic Haplustalfs, — fine, mixed., mesic	mod. deep gravelly loam —	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	58 cm 1700 m 13 deg.C 16 deg.C	Plains;complex slopes with an average length of 30 meters and a gradient of 5 percent; parent material is derived from miscellaneous sources.	30
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5					cm m deg.C deg.C		
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, moderately deep, very cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	cl	39	0	10	90	65-70	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	3.1	6.7	1.1	1.3
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.10	0	0	25	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	40	15	10	25

3.2 Typic Haplustalfs, LSM, 5, -1, fine, mixed, mesic, moderately deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	c	44	15	0	100	75-95	35	25	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	7.6	6.7	4.4	.7
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.20	0	0	10	6

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	10	0	60

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4451
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	750	800		
Forage	50	50		
Forage (maximum)	1600	2000		
Timber		Site Index		
Ponderosa pine	—	55		
Fuelwood		cd/ac		
Pinyon/juniper	16	4		
Potential for:		Rating		
Revegetation (drill)	High	High		
Reforestation	—	Low		
	—	Too dry		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Low strength	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	Used	—		
Pinyon Jay	Important	Essential		
Gambel Quail	Important	Important		
Acorn Woodpecker	Essential	Important		
Steller's Jay	Essential	Essential		
Limitations For:				
Timber Harvest	—	Severe		
	—	Low strength		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Severe	Severe		
	Low strength	Low strength		
Trails	Slight	Slight		
Campgrounds	Slight	Slight		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Slight	Moderate		
Mass Wasting	—	—		
Windthrow	—	Severe		
		Low strength		
Plant Competition	—	Moderate		
		Jude2		
		Juos		
		Quar		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeanna	Jude2	14	11		
Juniperus osteosperma	Juos	T	—		
Pinus monophylla	Pimo	21	4		
Pinus ponderosa	Pipo	—	30		
Quercus arizonica	Quar	2	4		
Quercus emoryii	Quem	2	1		
Shrubs:					
Arctostaphylos pringelii	Arpr	T	3		
Arctostaphylos pungens	Arpu5	15	12		
Baccharis pteronioides	Bapt	10	T		
Cercocarpus montana	Cemo2	3	3		
Garrya wrightii	Gawr	2	1		
Nolina microcarpa	Nomi	T	T		
Quercus turbinella	Qutu2	12	4		
Rhamnus crocea illicifolia	Rhcri	T	T		
Forbs:					
Achillia millifolium lan.	Acmil	—	1		
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa	1	1		
Psoralia tenuiflora	Psta3	4	—		
Graminoids:					
Agropyron smithii	Agsm	10	50		
Andropogon saccharoides	Ansa	10	—		
Aristida	ARIST	10	10		
Bouteloua curtipendula	Bocu2	1	1		
Bouteloua gracilis	Bogr2	1	1		
Koeleria cristata	Kocr	10	T		
Leptochloa dubia	Ledu	10	20		
Lycurus phleoides	Lyph	10	—		
Muhlenbergia longiligula	Mulo	10	50		
Muhlenbergia montana	Mumo	10	50		
Panicum obtusum	Paob	50	50		
Poa fendleriana	Pofe	10	20		
Sitanion hystrix	Sihy	1	50		

6.0 Management Implications:

6.1 This map unit is in an old logging and woodcut area. Management emphasis should be placed on stabilizing soil surface by revegetation or water barring of affected sites.

6.2 See 6.1 above

6.3

6.4

Notes:

#4457

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/12/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 4457 - Typic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, moderately deep, very gravelly sandy loam: Pimo/Jude2/Juos/Quem/Qutu2/Arpu5 - Lithic Ustochrepts, LSM, 4, +1, loamy-skeletal, mixed, mesic, very gravelly sandy loam: Pimo/Jude2/Juos/Quem/Qutu2/Arpu5 complex, 15-40% slopes

Setting: This map unit consists of a two terrestrial ecosystem components, which occur in an intricate inseparable pattern on rocky, complex hill and mountain slopes. Mean annual precipitation ranges from 46 to 58 centimeters; mean annual air temperature ranges from 11 to 14 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters. Delineations are irregular in shape and vary in size from 15 to 1000 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Ustochrepts, — loamy-skel., mixed, mesic	mod. deep v.gravelly sandy loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm 1600 m 13 deg.C 16 deg.C	Hills; complex convex slopes, averaging 10 meters in length with a gradient of 20 percent; parent material is derived from rhyolite, quartzite and granite.	50
2.2 Lithic Ustochrepts, — loamy-skel., mixed, mesic	--- v.gravelly sandy loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	56 cm 1600 m 13 deg.C 16 deg.C	Hills; complex convex slopes, averaging 10 meters in length with a gradient of 20 percent; parent material is derived from rhyolite, quartzite and granite.	35
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock outcrop	—	—	—	—	— cm m deg.C deg.C	—	15
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, +1, fine, mixed, mesic, moderately deep, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-66	cbvsl	6	60	35	65	15-30	10	NP	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	13.4	6.7	3.9	5.5
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard.	—	.10	0	15	35	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	45	10	25	20

3.2 Lithic Ustochrepts, LSM, 4, +1, fine, mixed, mesic, moderately deep, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-46	cbvsl	14	60	55	45	10-20	15	NP	SM	Low				Rate - t/ha/yr			
											Bedrock		Factor	13.4	4.5	5.5	5.5
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	—	.10	0	25	20	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	1	60	15	5	20

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 4457
Present Major Uses: Range, Recreation, Wildlife, Fuelwood
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	750	600		
Forage	50	50		
Forage (maximum)	1600	600		
Timber	Site Index			
Ponderosa Pine	—	—		
Fuelwood	cd/ac			
Pinyon/Juniper	16	5		
Potential for:	Rating			
Revegetation	Moderate	Moderate		
	Too steep	Too shallow		
Reforestation	—			
	—			
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Poor		
	Too steep	Too shallow		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
B.T. Gray Warbler	Essential	Essential		
Pinyon Mouse	Important	Important		
Pinyon Jay	Important	Important		
Desert Cottontail	Important	Important		
Gambel's Quail	Important	Important		
Limitations For:				
Timber Harvest	—	—		
	—			
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Moderate	Moderate		
	Slope	Slope		
Trails	Moderate	Severe		
	Too steep	Too shallow		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Moderate	Moderate		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Moderate	Moderate		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	14	10		
Pinus monophylla	Pimo	21	15		
Quercus arizonica	Quar	2	1		
Quercus emoryii	Quem	2	3		
Juniperus osteosperma	Juos	1	1		
Shrubs:					
Arctostaphylos pringelli	Arpr	T	T		
Arctostaphylos pungens	Arpu5	15	10		
Nolina Microcarpa	Nomi	1	1		
Quercus turbinella	Qutu2	12	10		
Forbs:					
Eriogonum	ERIOG	1	1		
Psoralia tenuiflora	Pste3	T	T		
Gutierrezia sarothrae	Gusa2	1	1		
Graminoids:					
Agropyron smithii	Agsm	.10	.10		
Andropogon saccharoides	Ansa	.10	.10		
Aristida	ARIST	.10	.10		
Bouteloua curtipendula	Bocu2	1	.50		
Bouteloua hirsuta	Bohi2	1	.50		
Bouteloua gracilis	Bogr2	1	.50		
Koeleria cristata	Kocr	.10	.10		
Leptochloa dubia	Ledu	.10	.10		
Lycurus phleoides	Lyph	.10	.10		
Muhlenbergia longiligula	Mulo	.10	.10		
Panicum obtusum	Paob	T	—		
Poa fendleriana	Pofe	.10	.10		
Sitanion hystrix	Sihy	1	.50		
		74.8	55.8		

6.0 Mangement Implications:

6.1 High surface rock cover precludes most management activities1.

6.2 —

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/8

1.0 Date: 9/12/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5103 - Udic Ustochrepts, LSM, 5, 0, loamy-skeletal, mixed, mesic, deep, gravelly loam: Quar/Qutu2/Arpu5
40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex mountain slopes. Mean annual precipitation ranges from 60 to 65 centimeters; mean annual air temperature ranges from 9 to 11 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1800 to 2000 meters. Delineations are irregular in shape and vary in size from 15 to 500 hectares. This map unit is characterized by a dendritic drainage pattern.

Pedons, mod Deep + shallow, No Depth phase on transects

2/3 of Pedons Lithic

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MAST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Ustochrepts, — loamy-skel., mixed, mesic	deep gravelly loam —	LSM 5 0	Quar/Qutu2/ Arpu5	Fire-edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Mountains; complex convex slopes with an average length of 10 meters and a gradient of 60 percent; parent material is derived from mixed sources.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Ustochrepts, LSM, 5, 0, loamy-skeletal, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
8-58	grvl	18	25	70	30	40-50	20	5	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	182.	6.7	22.0	4.2
											—	—	.20	% Veg. Ground Cover			
														0	80	55	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	15	5	50	30

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5103
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	1500			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	—			
Potential for:		Rating		
Revegetation	Low			
	Too steep			
Reforestation	Low			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Brown Creeper	Essential			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Severe			
	Too steep			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Severe			
	Slumps			
Windthrow	—			
Plant Competition	Severe			
	Quar			
	Quem			
	Arpu5			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	3			
Pinus ponderosa	Pipo	5			
Quercus arizonica	Quar	5			
Quercus emoryii	Quem	5			
Shrubs:					
Arctostaphylos pringelii	Arpr	10			
Arctostaphylos pungens	Arpu5	20			
Ceanothus fendleri	Cefe	A			
Nolina microcarpa	Nomi	3			
Quercus turbinellae	Qutu2	3			
Rhus trilobata	Rhtr	1			
Forbs:					
Achillia millifolium lan.	Acmi	2			
Eriodictyon	ERIOD	10			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Agropyron scoparius	Agsc	T			
Bouteloua gracilis	Bogr2	.50			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1.4			
Sitanion hystrix	Sihy	.10			

6.0 Management Implications:

6.1 Litter is the primary stabilizing factor. Steep slopes preclude most management activities. Fire damage has restricted most timber management potential.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-F
2550-7
01/07/8

1.0 Date: 9/17/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5161 - Typic Eutroboralts, LSC, 5, 0, fine, mixed, deep, cobbly clay loam: Pipo/Quga - Udic Ustochrepts, LSC, 5, 0, loamy-skeletal, mixed, frigid, very gravelly sandy loam: Pipo/Quga complex, 0-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate, inseparable pattern o severely eroded plains and hills in old slump areas. Both TEC's show evidence of mass failures and slope creep in the past Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 7 to 9 degrees Celsiu Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (L Patchy snow cover normally exists on this map unit from November to mid-March. This map unit has a mean annual snowfall of centimeters and a mean annual snow accumulation of 35 centimeters. The freeze free period is 100 days. Elevations range f 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 300 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / NAST / NSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Eutroboralts, — fine, mixed	deep cobbly clay loam —	LSC 5 0	Pipo/Quga	Edaphic	65 cm / 2300 m / 6 deg.C / 12 deg.C	Plains and hills; complex slopes averaging 15 meters in length and a gradient of 20 percent; parent material is derived from mixed sources.	60
2.2 Udic Ustochrepts, — loamy-skel., mixed, frigid	--- v.gravelly sandy loam —	LSC 5 0	Pipo/Quga	Edaphic	65 cm / 2300 m / 6 deg.C / 12 deg.C	Plains and hills; complex slopes averaging 15 meters in length and a gradient of 20 percent; parent material is derived from mixed sources.	35
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Lithic Eutroboralts, — clayey-skel., mixed	--- stony loam —	LSC 5 0	Pipo/Quga	Edaphic	56 cm / 2200 m / 6 deg.C / 12 deg.C	Mountains; complex slopes averaging 15 meters in length and a gradient of 20 percent; parent material is derived from sandstone and shale.	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Eutroboralts, LSC, 5, 0, fine, mixed, deep, cobbly clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	c	50	0	10	90	60-75	40	30	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	35.3	6.7	3.0	.8
											—	—	.15	% Veg. Ground Cover			
														0	40	60	85

Management Implications: These soils are extremely sensitive to erosion; roads and skid trails require sub-grade ammendments, water bars and monitoring.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	3	>2mm 30	BA 10	50	10

3.2 Udic Ustochrepts, LSC, 5, 0, loamy-skeletal, mixed, frigid, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-50	grvcl	27	10	55	45	30-40	25	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	23.5	6.7	3.7	.5
											—	—	.10	% Veg. Ground Cover			
														0	30	55	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	3	>2mm 40	BA 10	45	5

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

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TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5161
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500	500		
Forage	250	250		
Forage (maximum)	2500	2500		
Timber	Site Index			
Ponderosa Pine	70	70		
Fuelwood	cd/ac			
	—	—		
Potential for:	Rating			
Revegetation *	Moderate	Moderate		
	Too steep	Too steep		
Reforestation *	Moderate	Moderate		
	Too steep	Too steep		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Fair	Good		
	Shrink-swell			
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	Essential	Essential		
Elk	Essential	Essential		
Lewis Woodpecker	Essential	Essential		
Limitations For:				
Timber Harvest	Moderate	Slight		
	Low strength			
Cutbank Stability	Moderate	Slight		
	Low strength			
Unsurfaced Roads	Moderate	Slight		
	Low strength	(Slope <15%)		
Trails **	Moderate	Moderate		
	Too steep	Too Steep		
Campgrounds **	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Moderate	Slight		
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe	Moderate		
Mass Wasting	Moderate	Moderate		
	Slump	Slump		
Windthrow	Slight	Slight		
Plant Competition	Moderate	Moderate		
	Ouga	Ouga		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	T	T		
Pinus Ponderosa	Pipo	65	65		
Quercus gambelii	Ouga	1	1		
Shrubs:					
Ceanothus fendleri	Cefe	2	2		
Forbs:					
Achillea millefolium lan.	Acmi	5	5		
Pteridium aquilinum	Ptaq	T	T		
Verbascum thapsis	Verb	1	1		
Grammanoids:					
Agropyron smithii	Agsm	T	T		
Andropogon scoparius	Ansc	T	T		
Bouteloua gracilis	Bogr2	T	T		
Koeleria cristata	Kocr	T	T		
Leptochloa dubia	Ledu	.50	.50		
Muhlenbergia longiligula	Mulo	.50	.50		
Poa fendleriana	Pofe	1	.50		
Poa pratensis	Popr	1	1		
Sitanion hystrix	Sihy	.50	.50		

6.0 Mangement Implications:

6.1 Extreme variability and sensitivity requires on-site investigation for each project.

6.2 Extreme variability and sensitivity requires on-site investigation for each project.

6.3

6.4

Notes: * "Worst case" situation; change rating to "High" for slopes under 15%.
** "Worst case" situation; change rating to "Slight" for slopes under 5%.

TERRESTRIAL ECOSYSTEM SURVEY

Map Unit Description, Properties and Selected Interpretations

USDA-FS 2550-7 01/07/85

1.0 Date: 9/17/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5162 - Typic Eutroboralts, LSC, 5, 0, fine, mixed, deep, cobbly clay loam: Pipo/Quga - Udic Ustochrepts, LSC, 5, 0, loamy-skeletal, mixed, frigid, very gravelly sandy loam: Pipo/Quga - Typic Eutrochrepts, LSC, 6, 0, loamy-skeletal, mixed, frigid, deep, cobbly loam: Abco/Psmeq/Pipo undifferentiated group, 15-80% slopes

Setting: This map unit consists of three terrestrial ecosystem components, which occur as an undifferentiated group on hills and mountains in old slump areas. All three TEC's show evidence of mass failures and slope creep in the past. Mean annual precipitation ranges from 60 to 85 centimeters; mean annual air temperature ranges from 4 to 9 degrees Celsius. Approximately 50 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are cold (LSC). Patchy snow cover normally exists on this map unit from November to April. Mean annual snowfall ranges from 120 to 160 centimeters, with a mean annual snow accumulation of 70 centimeters. The freeze free period ranges from 90 to 100 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 50 to 1200 hectares. Intermittent streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST	cm / m / deg.C / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Eutroboralts, — fine, mixed	deep cobbly clay loam —	LSC 5 0	Pipo/Quga	Edaphic	65 / 2300 / 6 / 12	cm / m / deg.C / deg.C	Hills and mountains; complex slopes averaging 10 meters in length and a gradient of 40 percent; parent material is derived from mixed sources.	30
2.2 Udic Ustochrepts, — loamy-skel., mixed, frigid	— v.gravelly sandy loam —	LSC 5 0	Pipo/Quga	Edaphic	65 / 2300 / 6 / 12	cm / m / deg.C / deg.C	Hills and mountains; complex slopes averaging 10 meters in length and a gradient of 40 percent; parent material is derived from mixed sources.	30
2.3 Typic Eutrochrepts, — loamy-skel., mixed, frigid	deep cobbly loam —	LSC 6 0	Abco/Psmeq/ Pipo	Edaphic	72 / 2400 / 5 / 9	cm / m / deg.C / deg.C	Hills and mountains; complex slopes averaging 10 meters in length and a gradient of 40 percent; parent material is derived from mixed sources.	30
2.4						cm / m / deg.C / deg.C		
2.5 Lithic Ustochrepts, — mixed, frigid	— — — —	LSC 5 0	Pipo/Quga	Edaphic	65 / 2300 / 6 / 12	cm / m / deg.C / deg.C	Mountains; complex slopes averaging 5 meters in length and a gradient of 60 percent; parent material is derived from sandstone and shale.	5
2.6 Rock outcrop	—	—	—	—	—	cm / m / deg.C / deg.C	—	5

3.0 Estimated Soil Properties.

3.1 Typic Eutroboralts, LSC, 5, 0, fine, mixed, deep, cobbly clay loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	c	50	0	10	90	60-75	40	30	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	89.4	6.7	23.7	1.9
											—	—	.15	% Veg. Ground Cover 0	65	60	85

Management Implications: These soils are extremely sensitive to erosion; roads and skid trails require sub-grade amendments, water bars and monitoring.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	10	50	10

3.2 Udic Ustochrepts, LSC, 5, 0, loamy-skeletal, mixed, frigid, very gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-50	grvcl	27	10	55	45	30-40	25	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	59.6	6.7	5.8	1.3
											—	—	.10	% Veg. Ground Cover 0	55	55	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	40	10	45	5

3.3 Typic Eutrochrepts, LSC, 6, 0, loamy-skeletal, mixed, frigid, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grvcl	29	15	75	25	10-25	25	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	119.1	6.7	6.2	3.6
											—	—	.20	% Veg. Ground Cover 0	70	70	90

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	4	20	10	60	10

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5162
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500	500	400	
Forage	250	250	150	
Forage (maximum)	2500	2500	3500	
Timber	Site Index			
Ponderosa Pine	70	70	65	
Douglas Fir	—	—	70	
White Fir	—	—	70	
Fuelwood	cd/ac			
	—	—	—	
Potential for:	Rating			
Revegetation	Low	Low	Low	
	Too steep	Too steep	Too steep	
Reforestation	Low	Low	Low	
	Too steep	Too steep	Too steep	
Source Suitability:				
Topsoil	Poor	Poor	Poor	
	Too thin	Too thin	Too thin	
Roadfill	Poor	Poor	Poor	
	Too steep	Too steep	Too steep	
Wildlife Habitat Suit:				
Mule Deer	Important	Important	Important	
Turkey	Essential	Essential	Essential	
Elk	Essential	Essential	Essential	
Lewis Woodpecker	Essential	Essential	Essential	
Limitations For:				
Timber Harvest	Moderate	Moderate	Moderate	
	Too steep	Too steep	Too steep	
Cutbank Stability	Moderate	Slight	Severe	
	Low strength		Low strength	
Unsurfaced Roads	Severe	Severe	Severe	
	Too steep	Too steep	Too steep	
Trails	Severe	Severe	Severe	
	Too steep	Too Steep	Too steep	
Campgrounds	Severe	Severe	Severe	
	Too steep	Too steep	Too steep	
Wheeled O.R.V.	Severe	Slight	Slight	
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe	Severe	
Mass Wasting	Severe	Severe	Severe	
	Slump	Slump	Slump	
Windthrow	Slight	Slight	Slight	
Plant Competition	Moderate	Moderate	Moderate	
	Ouga	Ouga	Ouga	
	None	None		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Abies concolor	Abco	—	—	30	
Pinus Ponderosa	Pipo	65	65	15	
Pseudotsuga menziessii	Psmeg	—	—	30	
Quercus gambelii	Ouga	1	1	1	
Shrubs:					
Ceanothus tendleri	Cete	2	2	T	
Forbs:					
Achillea millefolium lan.	Acmil	5	5	T	
Pteridium aquilinium	Ptaq	T	T	4	
Verbascum thapsis	Vetb	1	1	2	
Graminoids:					
Agropyron smithii	Agsm	T	T	—	
Andropogon scoparius	Ansc	T	T	—	
Bouteloua gracilis	Bogr2	T	T	—	
Koeleria cristata	Kocr	T	T	—	
Leptochloa dubia	Ledu	.50	.50	—	
Muhlenbergia longiligula	Mulo	.50	.50	—	
Poa tendleriana	Pote	1	.50	.50	
Poa pratensis	Popr	1	3	.50	
Sitanion hystrix	Sihy	.50	.50	—	

6.0 Management Implications:

6.1 This is an extremely sensitive mapping unit. Very high runoff and surface removal rates occur where ground cover has been removed or where slope lengths exceed 25 meters.

6.2 See 6.1

6.3 See 6.1

6.4

Notes: "Worst case" situation; change rating to "High" for slopes under 15%.
"Worst case" situation; change rating to "Slight" for slopes under 5%.

#5165

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5165 - Udic Haplustalfs, LSM, 5,+1, fine-loamy, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Rone/Arpr, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping valley plains. Mean annual precipitation ranges from 60 to 70 centimeters; mean annual air temperature ranges from 9 to 11 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 20 centimeters. The freeze free period is 160 days. Elevations range from 1900 to 2200 meters. Delineations are irregular in shape and vary in size from 15 to 300 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
					cm / m / deg.C / deg.C	UPLAND	
2.1 Udic Haplustalfs, — fine-loamy, mixed, mesic	deep gravelly loam —	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	68 cm / 2100 m / 9 deg.C / 13 deg.C	Valley plains; simple convex slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from sandstone and shale.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5,+1, fine-loamy, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	cl	34	0	10	90	65-70	30	15	CL	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	6.2	6.7	.1	.1
														% Veg. Ground Cover			
											Hard	ss,sh	.20	0	0	90	90
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
											—	—	3	5	5	85	5

Management Implications: Roads and skid trails should include good drainage and sub-grade amendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion deterrent.

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			
											Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Management Implications:

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5165
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	400			
Forage	50			
Forage (maximum)	2800			
Timber	Site Index			
Ponderosa Pine	75			
Fuelwood	—	cd/ac		
Potential for:	Rating			
Revegetation	High			
Reforestation	High			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe *			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Juda2			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	8			
Pinus Ponderosa	Pipo	60			
Quercus arizonica	Quar	2			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	T			
Ceanothus tendleri	Cete	2			
Nolina microcarpa	Nomi	T			
Robinia neomexicana	Rone	4			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	.50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Poa tendleriana	Pote	1			
Poa pratensis	Popr	1.4			
Sitanion hystrix	Sihy	.10			

6.0 Management Implications:

6.1 Localized surface rock may limit reforestation on some sites.

* Severe Rating does not jibe with Unified of "CL"

6.2

6.3

6.4

Notes:

#5250

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5250 - Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Arpu5/Arpr 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 56 to 68 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 50 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — fine, mixed, mesic	deep gravelly loam —	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	64 cm 1900 m 10 deg.C 14 deg.C	Elevated plains; simple convex slopes with an average length of 15 meters and a gradient of 5 percent; parent material is derived from sandstone and shale. Limestone	100
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5					cm m deg.C deg.C		
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
20-70	c	42	10	10	90	70-85	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	5.4	6.7	2.3	.1
														% Veg. Ground Cover			
														0	0	45	85

Management Implications: Roads and skid trails should include good drainage and sub-grade amendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion deterrent.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	5	40	[illegible]

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5250
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	2500			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	—	cd/ac		
Potential for:	Rating			
Revegetation	High			
Reforestation	Moderate			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Jude2			
	Arpu5			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus deppeana	Jude2	11			
Pinus Ponderosa	Pipo	50			
Quercus arizonica	Quar	3			
Quercus emoryii	Quem	1			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	10			
Cercocarpus montana	Cemo2	T			
Garrya wrightii	Gawr	T			
Quercus turbinella	Qutu2	T			
Rhus trilobata	Rhtr	T			
Robinia neomexicana	Rone	T			
Nolina microcarpa	Nomi	1			
Forbs:					
Achillea millefolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Bohi2	.50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	.10			

6.0 Management Implications:

6.1 Moderate reforestation potential is expected due to shrub competition, elevated evapotranspiration rate and fluctuating moisture conditions. Site preparation should provide for depression storage, where feasable, to enhance seedling success.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5251 - Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam: Pipo/Juda2/Quar/Arpu5/Arpr
15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep to steep hills. Mean annual precipitation ranges from 56 to 68 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 50 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — fine, mixed, mesic	deep gravelly loam —	LSM 5 0	Pipo/Juda2/ Quar/Arpu5/ Arpr	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Hills: complex convex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from sandstone and shale.	75
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Udic Haplustalfs, — clayey-skel., mixed mesic	— — — —	LSM 5 0	Pipo/Juda2/ Quar/Arpu5/ Arpr	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Hills; complex slopes with an average length of 15 meters and gradient of 25 percent; parent material is derived from sandstone and shale.	15
2.6 Udic Haplustalfs, — loamy-skel., mixed mesic	— — — —	LSM 5 0	Pipo/Juda2/ Quar/Arpu5/ Arpr	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Hills; complex slopes with an average length of 15 meters and gradient of 25 percent; parent material is derived from sandstone and shale.	10

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	c	42	10	15	85	60-85	35	20	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	59.4	6.7	2.0	1.3
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	ss,sh	.20	0	55	75	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	15	5	70	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5251
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	2500			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	cd/ac			
	—			
Potential for:	Rating			
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Curbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Juda2			
	Arpu5			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	11			
Pinus Ponderosa	Pipo	50			
Quercus arizonica	Quar	3			
Quercus emoryii	Quem	1			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	10			
Cercocarpus montana	Cemo2	T			
Garrya wrightii	Gawr	T			
Quercus turbinella	Qutu2	T			
Rhus trilobata	Rhtr	T			
Robinia neomexicana	Rone	T			
Nolina microcarpa	Nomi	1			
Forbs:					
Achillea millefolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Boh12	.50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	.10			

6.0 Mangement Implications:

6.1 Slope range is a limiting factor for most mechanized activities; aerial reseeding potential is high over 80% of area.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5252 - Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Arpu5/Arpr 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep complex mountains. Mean annual precipitation ranges from 56 to 68 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 50 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — fine, mixed, mesic	deep gravelly loam —	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Mountains; complex convex slopes averaging 10 meters in length with 50 percent grades; parent material is derived from sandstone and shale.	75
2.2 DOESN'T MATCH LEGEND					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Udic Haplustalfs, — clayey-skel., mixed mesic	— — — —	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Mountains; complex slopes averaging 10 meters in length and a gradient of 50 percent; parent material is derived from mixed sources.	15
2.6 Rock outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	10

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, 0, fine, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
10-60	grc	44	0	25	75	50-75	35	25	CL	Mod.	—	—	—	Rate - t/ha/yr 110		147	2
											Bedrock Hard.	Kind	Factor K	6.7	34.2	3.2	
											Hard	(ss,sh)	.20 .15	% Veg. Ground Cover 0	75	35	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	30	35

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5252
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	1500			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	cd/ac			
	—			
Potential for:	Rating			
Revegetation	Severe			
	Too steep			
Reforestation	Severe			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Jude2			
	Arpu5			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:					
Juniperus deppeana	Jude2	11			
Pinus Ponderosa	Pipo	50			
Quercus arizonica	Quar	3			
Quercus emoryii	Quem	1			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	10			
Cercocarpus montana	Cemo2	T			
Garrya wrightii	Gawr	T			
Quercus turbinella	Qutu2	T			
Rhus trilobata	Rhtr	T			
Robinia neomexicana	Rone	T			
Nolina microcarpa	Nomi	1			
Forbs:					
Achillea millefolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Bohi2	.50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	.10			

6.0 Mangement Implications:

6.1 Slope range is a limiting factor for most mechanized activities; aerial reseeding potential is high over 80% of area.

6.2

6.3

6.4

Notes:

#5350

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5350 - Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam: Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on undulating elevated plains. Mean annual precipitation ranges from 50 to 65 centimeters; mean annual air temperature ranges from 10 to 13 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 to 1900 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 800 hectares. Sheet, rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MT / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Ustochrepts, — loamy-skel., mixed mesic	— gravelly sandy loam —	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	60 cm / 1700 m / 11 deg.C / 15 deg.C	Plains; complex slopes with an average length of 30 meters and gradient of 10 percent; parent material is derived from granite.	85
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Lithic Ustochrepts, — loamy-skel., mixed, mesic	— — — —	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Arpu5/Arpr	Edaphic	60 cm / 1700 m / 11 deg.C / 15 deg.C	Plains; complex slopes with an average length of 20 meters and gradient of 10 percent; parent material is residuum from granite.	15
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-89	grvsl	10	0	50	50	15-20	15	NP	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	14.6	6.7	1.3	1.3
											Hard	gr	.15	% Veg. Ground Cover 0	15	60	60

Management Implications: Decomposed granite soils in this microclimate have a high gullying potential.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	55	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5350
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	800			
Forage	50			
Forage (maximum)	1800			
Timber	Site Index			
Ponderosa pine	55			
Fuelwood	cd/ac			
Pinyon/juniper	4			
Potential for:	Rating			
Revegetation	High			
Reforestation	Low			
	Too dry			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Good			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Used			
Pinyon Jay	Important			
Steller's Jay	Essential			
Acorn Woodpecker	Essential			
Limitations For:				
Timber Harvest	Slight			
Cutbank Stability	Slight			
Unsurfaced Roads	Slight			
Trails	Slight			
Campgrounds	Moderate			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Moderate			
Mass Wasting	---			
Windthrow	Slight			
Plant Competition	Severe			
	Quar			
	Quem			
	Arpu5			
	Arpr			
	Outu2			

5.0 Composition of Plant Community:

Map Unit Components	Scientific Name	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Trees:						
	Juniperus deppeana	Jude2	11			
	Juniperus osteosperma	Juos	T			
	Pinus monophylla	Pimo	4			
	Pinus ponderosa	Pipo	30			
	Quercus arizonica	Quar	1			
	Quercus emoryii	Quem	4			
Shrubs:						
	Arctostaphylos pringlei	Arpr	3			
	Arctostaphylos pungens	Arpu5	12			
	Cercocarpus montana	Cemo2	3			
	Garrya wrightii	Gawr3	1			
	Molina microcarpa	Momi	2			
	Quercus turbinella	Outu2	4			
	Rhamnus crocea	Rhcr	T			
	Rhus ovata	Rhov	T			
	Rhus trilobata	Rhtr	T			
	Yucca schottii	Yusc	T			
Forbs:						
	Achillia millifolium lan.	Achmil	1			
	Erioginum	ERIOG	1			
	Erodium cicutarium	Erci	T			
	Gutierrezia sarothrae	Gusa	1			
	Psoralia tenuiflora	Pste3	T			
Graminoids:						
	Agropyron smithii	Agsm	.50			
	Andropogon scoparius	Ansc	T			
	Aristida	ARIST	.10			
	Bouteloua curtipendula	Bocu2	1			
	Bouteloua gracilis	Bogr2	1			
	Bouteloua hirsuta	Bohi2	.50			
	Koleria cristata	Kocr	T			
	Leptochloa dubia	Ledu	.20			
	Muhlenbergia longiligula	Mulo	.50			
	Muhlenbergia montana	Mumo	.50			
	Poa fendleriana	Pofe	.20			
	Sitanion hystrix	Sihy	.50			

6.0 Mangement Implications:

6.1 Soils derived from ruin granite tend to have low moisture storage capacity, low shear strength and high resistance to compaction. Sheet and rill erosion hazard is relatively low, but gullying potential is high. Revegetation potential is high only in areas which have depression storage or run-on water.

6.2

6.3

6.4

Notes:

#5351

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5351 - Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam: Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep to steep hills. Mean annual precipitation ranges from 50 to 65 centimeters; mean annual air temperature ranges from 10 to 13 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 meters on north aspects to 1900 meters on south aspects. Delineations are irregular in shape and vary in size from 15 to 800 hectares. Sheet, rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm MAT deg.C MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Ustochrepts, --- loamy-skel., mixed mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr	Edaphic	60 cm 1700 m 11 deg.C 15 deg.C	Hills; complex slopes with an average length of 15 meters and gradient of 30 percent; parent material is derived from granite.	85
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Lithic Ustochrepts, --- loamy-skel., mixed, mesic	--- --- --- ---	LSM 5 -1	Pipo/Pimo/Jude2/Quar/Arpu5/Arpr	Edaphic	60 cm 1700 m 11 deg.C 15 deg.C	Hills; complex slopes with an average length of 10 meters and gradient of 30 percent; parent material is residuum from granite.	15
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-81	grvsl	4	15	55	45	10-20	10	NP	GM	Low	---	---	---	Rate - t/ha/yr			
											Bedrock		Factor	60.1	6.7	9.8	5.3
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	gr	.15	0	55	45	60

Management Implications: ---

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
---	---	2	30	10	35	25

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			
											-1						

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5351
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Fuelwood

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	800			
Forage	50			
Forage (maximum)	1800			
Timber	Site Index			
Ponderosa pine	55			
Fuelwood	cd/ac			
Pinyon/juniper	4			
Potential for:	Rating			
Revegetation	Moderate			
	Too steep			
Reforestation	Low			
	Too dry			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Fair			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Used			
Pinyon Jay	Important			
Steller's Jay	Essential			
Acorn Woodpecker	Essential			
Limitations For:				
Timber Harvest	Moderate			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Moderate			
	Slope			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Severe			
	Quar			
	Quem			
	Arpu5			
	Arpr			
	Qutu2			

5.0 Composition of Plant Community:

Map Unit Components / Scientific Name	Symbol	5.1	5.2	5.3	5.4
		% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	11			
Juniperus osteosperma	Juos	T			
Pinus monophylla	Pimo	4			
Pinus ponderosa	Pipo	30			
Quercus arizonica	Quar	1			
Quercus emoryii	Quem	4			
Shrubs:					
Arctostaphylos pringlei	Arpr	3			
Arctostaphylos pungens	Arpu5	12			
Cercocarpus montana	Cemo2	3			
Garrya wrightii	Gawr3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	4			
Rhamnus crocea	Rhcr	T			
Rhus ovata	Rhov	T			
Rhus trilobata	Rhtr	T			
Yucca schottii	Yusc	T			
Forbs:					
Achillia millifolium lan.	Achmil	1			
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	1			
Psoralia tenuiflora	Pste3	T			
Gramminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	.10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Bohi2	.50			
Koleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.20			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	.20			
Sitanion hystrix	Sihy	.50			
		63			

6.0 Mangement Implications:

6.1 Soils derived from ruin granite tend to have low moisture storage capacity, low shear strength and high resistance to compaction. Sheet and rill erosion hazard is relatively low, but gullying potential is high.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5352 - Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam: Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex mountain slopes. Mean annual precipitation ranges from 50 to 65 centimeters; mean annual air temperature ranges from 10 to 13 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 meters on north aspects to 1900 meters on south aspects. Delineations are irregular in shape and vary in size from 15 to 800 hectares. Sheet, rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Ustochrepts, — loamy-skel., mixed mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	60 cm 1700 m 11 deg.C 15 deg.C	Mountains; complex slopes with average length of 10 meters and gradient of 45 percent; parent material is derived from granite.	85
2.2					cm m deg.C deg.C		
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock Outcrop	—	—	—	—	60 cm 1700 m 11 deg.C 15 deg.C	—	15
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Ustochrepts, LSM, 5, -1, loamy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-89	gryl	18	25	50	50	30-40	20	5	5	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	93.8	6.7	32.2	8.2
														% Veg. Ground Cover			
											Hard	gr	.15	0	65	25	60

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	2	30	5	20	45

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5352
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	800			
Forage	50			
Forage (maximum)	1800			
Timber	Site Index			
Ponderosa pine	55			
Fuelwood	cd/ac			
Pinyon/juniper	4			
Potential for:	Rating			
Revegetation	Severe LOW			
	Too steep			
Reforestation	Low			
	Too dry			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Used			
Pinyon Jay	Important			
Steller's Jay	Essential			
Acorn Woodpecker	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Severe			
	Quar			
	Quem			
	Arpu5			
	Arpr			
	Qutu2			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	11			
Juniperus osteosperma	Juos	T			
Pinus monophylla	Pimo	4			
Pinus ponderosa	Pipo	30			
Quercus arizonica	Quar	1			
Quercus emoryii	Quem	4			
Shrubs:					
Arctostaphylos pringlei	Arpr	3			
Arctostaphylos pungens	Arpu5	12			
Cercocarpus montana	Cemo2	3			
Garrya wrightii	Gawr3	1			
Nolina microcarpa	Nomi	2			
Quercus turbinella	Qutu2	4			
Rhamnus crocea	Rhcr	T			
Rhus ovata	Rhov	T			
Rhus trilobata	Rhtr	T			
Yucca schottii	Yusc	T			
Forbs:					
Achillia millifolium lan.	Achmil	1			
Eriogonum	ERIOG	1			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	1			
Psoralia tenuiflora	Pste3	T			
Graminoids:					
Agropyron smithii	Agsm	1.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	1.10			
Bouteloua curtipendula	Bocu2	1			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Bohi2	1.50			
Koleria cristata	Kocr	T			
Leptochloa dubia	Ledu	1.20			
Muhlenbergia longiligula	Mulo	1.50			
Muhlenbergia montana	Mumo	1.50			
Poa fendleriana	Pofe	1.20			
Sitanion hystrix	Sihy	1.50			

6.0 Management Implications:

6.1 Soils derived from ruin granite tend to have low moisture storage capacity, low shear strength and high resistance to compaction. Sheet and rill erosion hazard is relatively low, but gullying potential is high. Steep slopes limit most activities.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5368 - Udic Ustochrepts, LSM, 5, 0, calcareous, loamy-skeletal, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Arpu5/Comes, 15-40% slopes 15-80%

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on complex hills and mountains. Mean annual precipitation ranges from 50 to 60 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 60 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from November to April. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 15 to 800 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Ustochrepts, calcareous, loamy-skel., mixed, mesic	deep gravelly loam GRV —	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Comes	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Hills and mountains; complex slopes, average length of 15 meters and a gradient of 25 32% percent; parent material is derived from mixed calcareous sedimentary formations.	95
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock Outcrop	—	—	—	—	64 cm / 1900 m / 10 deg.C / 14 deg.C	—	5
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Ustochrepts, LSM, 5, 0, calcareous, loamy-skeletal, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-89	gryl	15	25	55	45	25-40	20	NP	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock			59.4	6.7	5.1	1.3
											Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	.20	0	55	60	75

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg. >2mm	Lit. BA	Soil
—	—	2	30	5	55	10

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg. >2mm	Lit. BA	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg. >2mm	Lit. BA	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg. >2mm	Lit. BA	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5368
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	2000			
Timber		Site Index		
Ponderosa Pine	65			
Fuelwood		cd/ac		
	—			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Slight			
Cutbank Stability	Moderate			
	Low strength			
Unsurfaced Roads	Slight			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Juda2			
	Arpu5			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1 % Canopy Cover	5.2	5.3	5.4
Scientific Name					
Trees:					
Juniperus deppeana	Juda2	11			
Pinus Ponderosa	Pipo	50			
Quercus arizonica	Quar	3			
Quercus emoryii	Quem	1			
Shrubs:					
Arctostaphylos pringelii	Arpr	1			
Arctostaphylos pungens	Arpu5	5			
Cercocarpus montana	Cemo2	T			
Cowania mexicana stans.	Comes	3			
Nolina microcarpaa	Nomi	T			
Rhus trilobata	Rhtr	T			
Robinia neomexicana	Rone	T			
Forbs:					
Achillea millefolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa	T			
Graminoids:					
Agropyron smithii	Agsm	50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	50			
Bouteloua gracilis	Bogr2	1			
Bouteloua hirsuta	Bohi2	50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	50			
Muhlenbergia longiligula	Mulo	50			
Muhlenbergia montana	Mumo	50			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	10			

6.0 Management Implications:

6.1 Slope range is a limiting factor for most mechanized activities. Calcareous soils may limit vegetetative recovery potential in both range and silvicultural applications.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/8

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5452 - Udic Haplustalfs, LSM, 5 +1, loamy-skeletal, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Rone/Arpr, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex mountain slopes. Mean annual precipitation ranges from 60 to 70 centimeters; mean annual air temperature ranges from 9 to 11 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from December to March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 20 centimeters. The freeze free period is 160 days. Elevations range from 1800 to 2200 meters. Delineations are irregular in shape and vary in size from 15 to 500 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	cm m deg.C deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — loamy-skel., mixed, mesic	deep gravelly loam —	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	68 2100 9 13	cm m deg.C deg.C	Mountains; complex convex slopes with an average length of 10 meters and a gradient of 55 percent; parent material is derived from mixed metamorphic rocks	95
2.2						cm m deg.C deg.C		
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5 Rock Outcrop	—	—	—	—	—	cm m deg.C deg.C	—	5
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, +1, loamy-skeletal, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
18-68	cbvcl	31	40	45	55	35-50	30	10	SC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	169.	6.7	5.2	2.4
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	—	.20	0	75	80	90

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	20	20	60	0

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5452
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	400			
Forage	50			
Forage (maximum)	2800			
Timber	Site Index			
Ponderosa pine	75			
Fuelwood	cd/ac			
Pinyon/juniper	—			
Potential for:	Rating			
Revegetation	Low			
	Too steep			
Reforestation	Low			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Brown Creeper	Essential			
Limitations For:				
Timber Harvest	Moderate			
	Too steep			
Cutbank Stability	Severe			
	Too steep			
Unsurfaced Roads	Severe			
	Slope			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Moderate			
	Slump			
Windthrow	Moderate			
Plant Competition	Moderate			
	Quar			
	Jude2			
	Rone			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	8			
Pinus ponderosa	Pipo	60			
Quercus arizonica	Quar	2			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	T			
Ceanothus fendleri	Cefe	2			
Nolina microcarpa	Nomi	T			
Robinia neomexicana	Rone	4			
Forbs:					
Achillia millifolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	T			
Verbascum thapsis	Veth	4			
Graminoids:					
Agropyron smithii	Agsm	.50			
Agropyron scoparius	Agsc	T			
Bouteloua gracilis	Bogr2	.50			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Muhlenbergia montana	Mumo	.50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1.4			
Sitanion hystrix	Sihy	.10			

6.0 Mangement Implications:

6.1 Litter is the primary stabilizing factor. Steep slopes preclude most management activities.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/12/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5471 - Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, deep, extremely cobbly sandy loam: Pimo/Jude2/Juos/Quar/Qutu2/Arpu5 - Udic Haplustalfs, LSM, 5, -1, fine, mixed, mesic, deep, very cobbly sandy loam: Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr association, 15-40% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an aspect controlled association on complex hills and mountains bounded by valley plains. TEC .1 occurs on south aspects and TEC .2 occurs on north aspects and sheltered sites. Mean annual precipitation ranges from 55 to 60 centimeters; mean annual air temperature ranges from 12 to 14 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October through 31 March and and winters are mild (LSM). This map unit has a mean annual snowfall of 50 centimeters. The freeze free period is 180 days. Elevations range from 1500 meters on north aspects to 1800 meters on south aspects. Delineations are irregular in shape and vary in size from 15 to 200 hectares. Gully erosion is conspicuous on both TEC's. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, — fine, mixed, mesic	deep ext.cobbly sandy loam —	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	58 1700 11 15	cm m deg.C deg.C	Hills and mountains; complex slopes averaging 15 meters length and 20 percent grades; parent material is derived from miscellaneous sources.	50
2.2 Udic Haplustalfs, — fine, mixed., mesic	mod. deep v.cobbly sandy loam —	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	58 1700 13 16	cm m deg.C deg.C	Hills and mountains; complex slopes averaging 15 meters length and 20 percent grades; parent material is derived from miscellaneous sources.	50
2.3						cm m deg.C deg.C		
2.4						cm m deg.C deg.C		
2.5						cm m deg.C deg.C		
2.6						cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, +1, fine, mixed, mesic, deep, extremely cobbly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
53-97	grcl	36	5	30	70	50-55	30	15	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	10.3	6.7	4.2	4.2
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.05	0	10	20	20

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	2	>2mm 70	BA 10	10	10

3.2 Typic Haplustalfs, LSM, 5, -1, fine, mixed, mesic, deep, very cobbly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
3-53	cbcl	35	10	15	85	55-70	30	15	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	20.6	6.7	1.8	1.8
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.10	0	30	60	60

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	2	>2mm 40	BA 5	55	0

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5471
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	750	800		
Forage	50	50		
Forage (maximum)	1600	2000		
Timber	Site Index			
Ponderosa pine	—	55		
Fuelwood	cd/ac			
Pinyon/juniper	16	4		
Potential for:	Rating			
Revegetation (drill)	Moderate	Moderate		
	Too steep	Too steep		
Reforestation	—	Low-		
	—	Too dry		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Low strength	Low strength		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	—	Used		
Pinyon Jay	Important	Essential		
Gambel Quail	Important	Important		
Acorn Woodpecker	Essential	Important		
Steller's Jay	Essential	Essential		
Limitations For:				
Timber Harvest	—	Severe		
	—	Low strength		
Cutbank Stability	Slight	Slight		
Unsurfaced Roads	Severe	Severe		
	Low strength	Low strength		
Trails	Moderate	Moderate		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Moderate	Moderate		
Mass Wasting	—	—		
Windthrow	—	Severe		
		Low strength		
Plant Competition	—	Moderate		
		Jude2		
		Quar		
		Arpu5		
		Outu2		
		Arpr		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeanna	Jude2	14	11		
Juniperus osteosperma	Juos	T	—		
Pinus monophylla	Pimo	21	4		
Pinus ponderosa	Pipo	—	30		
Quercus arizonica	Quar	2	4		
Quercus emoryii	Quem	2	1		
Shrubs:					
Arctostaphylos pringelii	Arpr	T	3		
Arctostaphylos pungens	Arpu5	15	12		
Baccharis pteronioides	Bapt	.10	T		
Cercocarpus montana	Cemo2	3	3		
Garrya wrightii	Gawr	2	1		
Nolina microcarpa	Nomi	T	T		
Quercus turbinella	Outu2	12	4		
Rhamnus crocea illicifolia	Rhcri	T	T		
Forbs:					
Achillia millifolium lan.	Acmi1	—	1		
Eriogonum	ERIOG	1	1		
Gutierrezia sarothrae	Gusa	1	1		
Psoralia tenuiflora	Psta3	4	—		
Graminoids:					
Agropyron smithii	Agsm	.10	.50		
Andropogon saccharoides	Ansa	.10	—		
Aristida	ARIST	.10	.10		
Bouteloua curtipendula	Bocu2	1	1		
Bouteloua gracilis	Bogr2	1	1		
Koeleria cristata	Kocr	.10	T		
Leptochloa dubia	Ledu	.10	.20		
Lycurus phleoides	Lyph	.10	—		
Muhlenbergia longiligula	Mulo	.10	.50		
Muhlenbergia montana	Mumo	.10	.50		
Panicum obtusum	Paob	.50	.50		
Poa fendleriana	Pofe	.10	.20		
Sitanion hystrix	Sihy	1	.50		

6.0 Mangement Implications:

6.1 Reseeding is best done by aerial or broadcast method.

6.2 —

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5550 - Udic Haplustalfs, LSM, 5, 0, fine, montmorillonitic, mesic, deep, gravelly loam: Pipo/Jude2/Quar, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 56 to 68 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of [illegible] centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 5 to 1200 hectares. This map unit is characterized by a dendritic drainage pattern. Sheet and rill erosion is conspicuous within the map unit.

* PARTS OF MU MAY BE LSM 5,-1

2.0 Map Unit Components, Characteristics and Composition.

	Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1	Udic Haplustalfs, fine, mont., mesic	deep gravelly loam	LSM 5 0	Pipo/Jude2/ Quar	Edaphic	64 / 1900 / 10 / 14	Elevated plains; simple concaved slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from basalt.	100
2.2								
2.3								
2.4								
2.5								
2.6								

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, 0, fine, montmorillonitic, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
8-36	c	46	10	15	85	60-85	50	25	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	6.2	6.7	.5	.1
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	has	.20	0	0	60	85

Management Implications: These soils have the potential to form vertisols under conditions of accelerated erosion. This process is nearly irreversable if allowed to begin.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF (>2mm)	Veg. BA	Lit.	Soil
—	—	2	20	5	55	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF (>2mm)	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF (>2mm)	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF (>2mm)	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5550
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	2500			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	cd/ac			
Pinyon/Juniper	—			
Potential for:	Rating			
Revegetation	High			
Reforestation	Moderate			
	Too clayey			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too thin			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Elk	Used			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Slight			
	(0-5% only)			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	Severe			
	Low strength			
Plant Competition	Moderate			
	Quar			
	Jude2			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	11			
Pinus Ponderosa	Pipo	40			
Quercus arizonica	Quar	4			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	T			
Nolina Microcarpa	Nomi	1			
Robinia neomexicana	Rone	T			
Forbs:					
Achillia millifolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	50			
Bouteloua hirsuta	Bohi2	50			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	50			
Muhlenbergia longiligula	Mulo	50			
Mulenbergia montana	Mumo	50			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	10			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor sod-forming grasses. Soil moisture content is critical for mechanical seeding due to high compaction potential.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5551 - Udic Haplustalfs, LSM, 5, 0, fine, montmorillonitic, mesic, deep, gravelly loam: Pipo/Jude2/Quar, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on strongly sloping convex hills. Mean annual precipitation ranges from 56 to 68 centimeters; mean annual air temperature ranges from 10 to 12 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 90 centimeters and a mean annual snow accumulation of 10 centimeters. The freeze free period is 170 days. Elevations range from 1600 to 2000 meters. Delineations are irregular in shape and vary in size from 5 to 1200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Udic Haplustalfs, — fine, mont., mesic	deep gravelly loam —	LSM 5 0	Pipo/Jude2/ Quar	Edaphic	64 cm / 1900 m / 10 deg.C / 14 deg.C	Hills; simple convex slopes with an average length of 15 meters and a gradient of 20 percent parent material is derived from basalt.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5, 0, fine, montmorillonitic, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
8-58	c	43	0	10	90	70-85	50	20	CH	High	—	—	—	Rate - t/ha/yr			
											Bedrock			41.1	6.7	4.5	.9
											Hard.	Kind	Factor K	% Veg. Ground Cover			
											Hard	bas	.20	0	45	55	65

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	25	30	15

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock						
											Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5551
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	500			
Forage	50			
Forage (maximum)	2500			
Timber		Site Index		
Ponderosa Pine	70			
Fuelwood		cd/ac		
Pinyon/Juniper	—			
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steepy			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Elk	Used			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Low strength			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Severe			
	Low strength			
Plant Competition	Moderate			
	Quar			
	Jude2			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	11			
Pinus Ponderosa	Pipo	40			
Quercus arizonica	Quar	4			
Quercus emoryii	Quem	T			
Shrubs:					
Arctostaphylos pringelli	Arpr	T			
Arctostaphylos pungens	Arpu5	T			
Nolina Microcarpa	Nomi	1			
Robinia neomexicana	Rone	T			
Forbs:					
Achillia millifolium lan.	Acmil	4			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	.50			
Andropogon scoparius	Ansc	T			
Aristida	ARIST	T			
Bouteloua curtipendula	Bocu2	.50			
Bouteloua hirsuta	Bohi2	.50			
Bouteloua gracilis	Bogr2	1			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	.50			
Muhlenbergia longiligula	Mulo	.50			
Mulenbergia montana	Mumo	.50			
Panicum obtusum	Paob	1			
Poa fendleriana	Pofe	1			
Sitanion hystrix	Sihy	.10			

6.0 Mangement Implications:

6.1 Basalt derived soils and high clay content favor sod-forming grasses. Soil moisture content is critical for mechanical seeding due to high compaction potential.

6.2

6.3

6.4

Notes:

#5650

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 5650 - Udic Haplustalfs, LSM, 5, +1, fine, mixed, mesic, deep, gravelly loam: Pipo/Jude2/Quar/Rone/Arpr
0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 60 to 70 centimeters; mean annual air temperature ranges from 9 to 11 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 120 centimeters and a mean annual snow accumulation of 20 centimeters. The freeze free period is 160 days. Elevations range from 1900 to 2200 meters. Delineations are irregular in shape and vary in size from 50 to 600 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAT / MSST	Landform; Slope Characteristics; Parent Material.	Map Co
2.1 Udic Haplustalfs, — fine, mixed, mesic	deep gravelly loam —	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	68 cm / 2100 m / 9 deg.C / 13 deg.C	Elevated plains; simple convex slopes with an average length of 20 meters and a gradient of 5 percent; parent material is derived from mixed sedimentary formations.	10
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5,+1, fine, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
30-80	c	42	0	10	90	70-85	35	20	CL	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	6.2	6.7	.3	.1
											Hard.	Kind	K	% Veg. Ground Cover			
											Hard	ss,sh	.20	0	0	75	90

Management Implications: Roads and skid trails should include good drainage and sub-grade ammendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion deterrent.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	20	5	70	5

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

Map Symbol: 5650
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	400			
Forage	50			
Forage (maximum)	2800			
Timber	Site Index			
Ponderosa Pine	70			
Fuelwood	—	cd/ac		
Potential for:	Rating			
Revegetation	Moderate			
	Too clayey			
Reforestation	High			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Slight			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Slight			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Jude2			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	8			
Pinus Ponderosa	Pipo	60			
Quercus arizonica	Quar	2			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	T			
Ceanothus fendleri	Cefe	2			
Nolina microcarpa	Nomi	T			
Robinia neomexicana	Rone	4			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinum	Ptaq	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	50			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	50			
Muhlenbergia longiligula	Mulo	50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1.4			
Sitanion hystrix	Sihy	10			

6.0 Mangement Implications:

6.1 Localized surface rock may limit reforestation on some sites.

6.2

6.3

6.4

Notes:

#3651

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

U
25.
01/0

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 5651 - Udic Haplustalfs, LSM, 5, +1, clayey-skeletal, mixed, mesic, deep, cobbly loam: Pipo/Jude2/
Rone/Arpr, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on steep complex hills and moun
Mean annual precipitation ranges from 60 to 70 centimeters; mean annual air temperature ranges from 9 to 11 degrees Cels
Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (
Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of
centimeters and a mean annual snow accumulation of 20 centimeters. The freeze free period is 160 days. Elevations range
1900 to 2200 meters. Delineations are irregular in shape and vary in size from 50 to 600 hectares. This map unit is
characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.
2.1 Udic Haplustalfs, — clayey-skel., mixed, mesic	deep cobbly loam —	LSM 5 +1	Pipo/Jude2/ Quar/Rone/ Arpr	Edaphic	68 cm / 2100 m / 9 deg.C / 13 deg.C	Hills and mountains; complex convex slopes, averaging 15 meters in length, with 25 percent grades; parent material is derived from mixed sedimentary formations.
2.2					cm / m / deg.C / deg.C	
2.3					cm / m / deg.C / deg.C	
2.4					cm / m / deg.C / deg.C	
2.5					cm / m / deg.C / deg.C	
2.6					cm / m / deg.C / deg.C	

3.0 Estimated Soil Properties.

3.1 Udic Haplustalfs, LSM, 5,+1, clayey-skeletal, mixed, mesic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell Mod.	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.
33-83	cbvcl	37	25	40	60	40-50	30	15	SC		—	—	—	Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K	59.4	6.7	2.5
											% Veg. Ground Cov					
											Hard	—	.20	0	55	75

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.
—	—	3	20	10	65

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
											% Veg. Ground Cove					

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosi Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
											% Veg. Ground Cove					

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.
														Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K			
											% Veg. Ground Cove					

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Com RF >2mm	Veg. BA	Lit.

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 5651
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	400			
Forage	50			
Forage (maximum)	2800			
Timber -		Site Index		
Ponderosa Pine	75			
Fuelwood	—	cd/ac		
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Moderate			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Essential			
Abert Squirrel	Essential			
Lewis Woodpecker	Essential			
Acorn Woodpecker	Essential			
Steller's Jay	Essential			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Moderate			
	Fines >30%			
Cutbank Stability	Moderate			
	Clay-skel.			
Unsurfaced Roads	Moderate			
	Too steep			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Moderate			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Juda2			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	8			
Pinus Ponderosa	Pipo	60			
Quercus arizonica	Quar	2			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	4			
Arctostaphylos pungens	Arpu5	T			
Ceanothus fendleri	Cefe	2			
Nolina microcarpa	Nomi	T			
Robinia neomexicana	Rone	4			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	T			
Verbascum thapsis	Veth	1			
Graminoids:					
Agropyron smithii	Agsm	50			
Andropogon scoparius	Ansc	T			
Bouteloua gracilis	Bogr2	50			
Koeleria cristata	Kocr	T			
Leptochloa dubia	Ledu	50			
Muhlenbergia longiligula	Mulo	50			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1.4			
Sitanion hystrix	Sihy	10			
		91.5			

6.0 Mangement Implications:

6.1 Localized surface rock may limit reforestation on some sites.

6.2

6.3

6.4

Notes:

#6250

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 6250 - Glossoboric Hapludalfs, LSM, 6, -1, fine,, mixed, mesic, deep, loam: Psmeg/Pipo/Jude2/Quar/Arpr, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on gently sloping elevated plains. Mean annual precipitation ranges from 70 to 85 centimeters; mean annual air temperature ranges from 8 to 10 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM) Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 170 centimeters and a mean annual snow accumulation of 30 centimeters. The freeze free period is 150 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 200 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp. %
2.1 Glossoboric Hapludalfs, deep — * fine, mixed, mesic	— or loam —	LSM 6 -1	Psmeg/Pipo/Jude2/Quar/Arpr	Edaphic	72 cm / 2200 m / 8 deg.C / 12 deg.C	Elevated plains; simple convex slopes with an average length of 15 meters and a gradient of 10 percent; parent material is derived from sandstone and shale.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6 * Rep site does not classify as Glossoboric SG.					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Glossoboric Hapludalfs, LSM, 6, -1, fine, mixed, mesic, deep, loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
5-55	cl	38	5	15	85	55-70	35	15	CL	Mod.	—	—	—	>2	Rate - t/ha/yr		
											Bedrock Hard.	Kind	Factor K	29.2	6.7	1.5	.2
											Hard	ss,sh	.37	% Veg. Ground Cover			
														0	35	70	95

Management Implications: Roads and skid trails should include good drainage and sub-grade ammendments, due to slow permeability and high runoff potential. Needle-cast currently provides the best erosion deterrent.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	4	10	5	65	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
			>2mm	BA		

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6250
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	300			
Forage	50			
Forage (maximum)	3500			
Timber		Site Index		
Ponderosa Pine	65			
Douglas Fir	70			
Fuelwood	—	cd/ac		
Potential for:		Rating		
Revegetation	High			
Reforestation	High			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Red Squirrel	Essential			
Elk	Essential			
Clark's Nutcracker	Essential			
Steller's Jay	Important			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Slight			
Campgrounds	Slight			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Rone			
	Arpr			

5.0 Composition of F & Comm

Map Unit Components	Scientific Name
Trees:	
	Juniperus deppeana
	Pinus Ponderosa
	Pseudotsuga menziesii
	Quercus arizonica
	Quercus gambelii
Shrubs:	
	Arctostaphylos pringeli
	Ceanothus fendleri
	Robinia neomexicana
Forbs:	
	Achillea millefolium lan.
	Pteridium aquilinium
	Verbascum thapsis
Graminoids:	
	Leptochloa dubia
	Poa fendleriana
	Poa pratensis

6.0 Mangement Implications:

6.1 Localized surface rock may limit reforestation on some sites.

6.2

6.3

6.4

Notes:

#6251

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 6251 - Glossoboric Hapludalfs, LSM, 6, -1, fine,, mixed, mesic, deep, gravelly loam: Psmeg/Pipo/Jude2/ /Quar/Arpr, 15-40% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on moderately steep complex hills. Mean annual precipitation ranges from 70 to 85 centimeters; mean annual air temperature ranges from 8 to 10 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 170 centimeters and a mean annual snow accumulation of 30 centimeters. The freeze free period is 150 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 200 hectares. Ephemeral streams are present within the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP cm / MAT m / MSST deg.C / MSST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Glossoboric Hapludalfs, fine, mixed, mesic	deep gravelly loam	LSM 6 -1	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	72 cm / 2200 m / 8 deg.C / 12 deg.C	Hills; complex convex slopes averaging 25 meters in length with a gradient of 25 percent; parent material is derived from mixed sources.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Glossoboric Hapludalfs, LSM, 6, -1, fine, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
15-65	grcl	35	10	15	85	65-70	30	15	CL	Mod.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	67.9	6.7	3.2	.5
											—	—	.20	% Veg. Ground Cover			
														0	55	70	95

Management Implications: Needle cast is the primary erosion deterrent on these soils. Removal of the surface litter layer will cause accelerated soil loss.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	4	10	5	65	20

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6251
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	300			
Forage	50			
Forage (maximum)	3500			
Timber		Site Index		
Ponderosa Pine	65			
Douglas Fir	70			
Fuelwood	—	cd/ac		
Potential for:		Rating		
Revegetation	Moderate			
	Too steep			
Reforestation	Moderate			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Red Squirrel	Essential			
Elk	Essential			
Clark's Nutcracker	Essential			
Steller's Jay	Important			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Moderate			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	—			
Windthrow	Slight			
Plant Competition	Moderate			
	Quar			
	Rone			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	4			
Pinus Ponderosa	Pipo	45			
Pseudotsuga menziesii gl.	Psmeg	25			
Quercus arizonica	Quar	1			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	2			
Ceanothus fendleri	Cefe	2			
Robinia neomexicana	Rone	1			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	5			
Verbascum thapsis	Veth	4			
Graminoids:					
Leptochloa dubia	Ledu	T			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1			

6.0 Mangement Implications:

6.1 Reforestation requires implementation of extensive erosion control methods.

6.2

6.3

6.4

Notes:

#6252

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/13/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 6252 - Glossoboric Hapludalfs, LSM, 6, -1, fine, mixed, mesic, deep, cobbly loam: Psmeg/Pipo/Jude2/Quar/Arpr, 40-80% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep mountain slopes. Mean annual precipitation ranges from 70 to 85 centimeters; mean annual air temperature ranges from 8 to 10 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 170 centimeters and a mean annual snow accumulation of 30 centimeters. The freeze free period is 150 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 15 to 200 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Glossoboric Hapludalfs, fine, mixed, mesic	deep cobbly loam	LSM 6 -1	Psmeg/Pipo/Jude2/Quar/Arpr	Edaphic	72 / 2200 / 8 / 12	Mountains; complex convex slopes averaging 10 meters in length with a gradient of 45 percent; parent material is derived from sandstone and shale.	90
2.2							
2.3							
2.4							
2.5 Rock outcrop	—	—	—	—	—	—	10
2.6							

3.0 Estimated Soil Properties.

3.1 Glossoboric Hapludalfs, LSM, 6, -1, fine, mixed, mesic, deep, cobbly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell
13-63	grcl	35	10	15	85	65-70	30	15	CL	Mod.

Soil Wetness: Depth —; Durat. —; Months —
Bedrock: Hard. —; Kind —
Factor K: .20
Erosion Class: Water —; Wind —
Organic Matter %: 4

Sheet/Rill Erosion Rate - t/ha/yr: Pot. 143.; Tol. 6.7; Cur. 4.3; Nat. 1.1
% Veg. Ground Cover: 0; 75; 80; 95
% Cur. Surface Comp.: RF >2mm 15; Veg. BA 10; Lit. 70; Soil 5

Management Implications: Needle cast is the primary erosion deterrent on these soils. Removal of the surface litter layer will cause accelerated soil loss.

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth; Durat.; Months
Bedrock: Hard.; Kind
Factor K
Erosion Class: Water; Wind
Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot.; Tol.; Cur.; Nat.
% Veg. Ground Cover
% Cur. Surface Comp.: RF >2mm; Veg. BA; Lit.; Soil

Management Implications:

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth; Durat.; Months
Bedrock: Hard.; Kind
Factor K
Erosion Class: Water; Wind
Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot.; Tol.; Cur.; Nat.
% Veg. Ground Cover
% Cur. Surface Comp.: RF >2mm; Veg. BA; Lit.; Soil

Management Implications:

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell

Soil Wetness: Depth; Durat.; Months
Bedrock: Hard.; Kind
Factor K
Erosion Class: Water; Wind
Organic Matter %

Sheet/Rill Erosion Rate - t/ha/yr: Pot.; Tol.; Cur.; Nat.
% Veg. Ground Cover
% Cur. Surface Comp.: RF >2mm; Veg. BA; Lit.; Soil

Management Implications:

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6252
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	300			
Forage	50			
Forage (maximum)	2500			
Timber		Site Index		
Ponderosa Pine	65			
Douglas Fir	70			
Fuelwood	---	cd/ac		
Potential for:		Rating		
Revegetation	Severe (Low)			
	Too steep			
Reforestation	Severe (Low)			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Low Strength			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Red Squirrel	Essential			
Elk	Essential			
Clark's Nutcracker	Essential			
Steller's Jay	Important			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Low strength			
Cutbank Stability	Severe			
	Low strength			
Unsurfaced Roads	Severe			
	Low strength			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Low strength			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Severe			
	Slumps			
Windthrow	Slight			
Plant Competition	Severe			
	Quar			
	Rone			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	JudeZ	4			
Pinus Ponderosa	Pipo	45			
Pseudotsuga menziesii gl.	Psmeo	25			
Quercus arizonica	Quar	1			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	2			
Ceanothus fendleri	Cefe	2			
Robinia neomexicana	Rone	1			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	5			
Verbascum thapsis	Veth	4			
Graminoids:					
Leptochloa dubia	Ledu	T			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1			

6.0 Management Implications:

6.1 Steep slopes restrict most management activities.

6.2

6.3

6.4

Notes:

#6368

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 6368 - Glossoboric Hapludalfs, LSM, 6, -1, loamy-skeletal, mixed, mesic, deep, gravelly loam: Psmeq/Pipo Jude2//Quar/Arpr - Typic Eutrochrepts, LSM, 6, -1, calcareous, loamy-skeletal, mixed, mesic, deep, gravelly loam: Psmeq/Pipo/ Psmeq/Pipo/Jude2/Quar/Arpr complex, 40-80% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate inseparable complex pattern on steep to very steep mountain slopes bounded by sharply ascending scarps and canyons along the Mogollon Rim. Mean annual precipitation ranges from 70 to 85 centimeters; mean annual air temperature ranges from 8 to 10 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 170 centimeters and a mean annual snow accumulation of 30 centimeters. The freeze free period is 150 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 100 to 800 hectares. Intermittent streams occur within both TEC's. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Glossoboric Hapludalfs, deep CBV — loamy-skel., mixed, mesic	gravelly SL loam —	LSM 6 -1	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	72 cm / 2200 m / 8 deg.C / 12 deg.C	Mountains; complex convex slopes averaging 10 meters in length with a gradient of 50 percent; parent material is derived from sandstone and shale.	60
2.2 Typic Eutrochrepts, calcareous, loamy-skel., mixed, mesic	deep gravelly CBV loam —	LSM 6 -1	Psmeg/Pipo/ Jude2/Quar/ Arpr	Edaphic	72 cm / 2200 m / 8 deg.C / 12 deg.C	Mountains; complex convex slopes averaging 10 meters in length with a gradient of 50 percent; parent material is derived from sandstone and shale.	30
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Glossoboric Hapludalfs, LSM, 6, -1, loamy-skeletal, mixed, mesic, deep, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
6-56	grvcl	33	15	50	50	35-40	30	10	GC	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	168	6.7	11.4	
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.20	0	75	65	95

Management Implications: Needle cast is the primary erosion deterrent on these soils. Removal of the surface litter layer will cause accelerated soil loss.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	>2mm	Veg. BA	Lit.	Soil
—	—	4	30	10	55	5	

3.2 Typic Eutrochrepts, LSM, 6, -1, calcareous, loamy-skeletal, mixed, mesic, gravelly loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-86	grvl	20	0	70	30	20-25	20	10	GM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	168	6.7	6.9	1.3
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	.20	0	70	75	95

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	>2mm	Veg. BA	Lit.	Soil
—	—	3	20	10	65	5	

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	>2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	>2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6368
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	300	300		
Forage	50	50		
Forage (maximum)	1500	1000		
Timber		Site Index		
Ponderosa Pine	65	60		
Douglas Fir	70	60		
Fuelwood		cd/ac		
	—	—		
Potential for:		Rating		
Revegetation	Severe	Severe		
	Too steep	Too steep		
Reforestation	Severe	Severe		
	Too steep	Too steep		
Source Suitability:				
Topsoil	Poor	Poor		
	Too thin	Too thin		
Roadfill	Poor	Poor		
	Too steep	Too steep		
Wildlife Habitat Suit:				
Mule Deer	Important	Important		
Turkey	Important	Important		
Red Squirrel	Essential	Important		
Elk	Essential	Essential		
Clark's Nutcracker	Essential	Essential		
Steller's Jay	Important	Essential		
Cassin's Finch	Essential	Essential		
Limitations For:				
Timber Harvest	Severe	Severe		
	Low strength	Low strength		
Cutbank Stability	Severe	Severe		
	Low strength	Low strength		
Unsurfaced Roads	Severe	Severe		
	Low strength	Low strength		
Trails	Severe	Severe		
	Too steep	Too steep		
Campgrounds	Severe	Severe		
	Too steep	Too steep		
Wheeled O.R.V.	Severe	Severe		
	Low strength	Low strength		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	Severe	Severe		
	Slumps	Slumps		
Windthrow	Slight	Slight		
Plant Competition	Moderate	Moderate		
	Quar	Quar		
	Rone	Rone		
	Arpr	Arpr		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2	4	4		
Pinus Ponderosa	Pipo	45	35		
Pseudotsuga menziesii gl.	Psmeg	25	20		
Quercus arizonica	Quar	1	2		
Quercus gambelii	Ouga	T	—		
Shrubs:					
Arctostaphylos pringelii	Arpr	2	2		
Ceanothus fendleri	Cefe	2	2		
Robinia neomexicana	Rone	1	5		
Forbs:					
Achillea millefolium lan.	Acmil	6	4		
Pteridium aquilinum	Ptaq	5	1		
Verbascum thapsis	Veth	4	1		
Graminoids:					
Leptochloa dubia	Ledu	T	T		
Poa fendleriana	Pofe	1	1		
Poa pratensis	Popr	1	1		
		97	78		

6.0 Mangement Implications:

6.1 Steep slopes restrict most management activities.

6.2 Steep slopes restrict most management activities.

6.3

6.4

Notes:

#6405

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 6405 Rock outcrop - Typic Udorthents, LSC, 6, 0, sandy-skeletal, mixed, frigid, gravelly sandy loam: Abco/Psmeg/Pipo/Pist/Ouga - Typic Udorthents, LSM, 6, -1, sandy-skeletal, mixed, mesic, gravelly sandy loam: Psmeg/Pipo/Jude2/Quar/Arpr - Typic Ustorthents, LSM, 5, +1, sandy-skeletal, mixed, mesic, gravelly sandy loam: Pipo/Jude2/Quar/Rone/Arpr association, 40-120% slopes

Setting: This map unit consists of four terrestrial ecosystem components, which occur in an elevationally controlled vertical association, forming the Mogollon Rim. TEC .1 occurs as a nearly vertical escarpment, which forms the rim itself. TEC's .2 and .3 occur on extremely steep scarp slopes. TEC .4 occupies the lower posistion on very steep mountain slopes. The various components are best distinguished by their distinctive vegetation. Lithology is a prominent feature, consisting of Supai and Coconino sandstones, with interbedded limestone. Mean annual precipitation ranges from 55 to 86 centimeters; mean annual air temperature ranges from 7 to 10 degrees Celsius. This map unit spans two climatic gradients - LSC and LSM; precipitation is about evenly divided between warm and cool seasons. The freeze free period ranges from 120 to 160 days. This map unit has a mean annual snowfall of 120 to 200 centimeters, with 20 to 50 centimeters accumulation. Patchy snow may occur at varying elevations from November to April. Elevations range from 1800 to 2400 meters on predominantly south aspects. This single delineation is 8200 hectares in size. The drainage patterns are parallel and dendritic, forming headwaters of several streams.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	cm / m / deg.C / deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Rock outcrop	---	---	---	---	---		Scarps; vertical and extremely steep rock outcrops in the Supai and Coconino formations.	30
2.2 Typic Udorthents, — sandy-skel., mixed, frigid	— * CBV gravelly sandy loam —	LSC 6 0	Abco/Psmeg/Pipo/Pist/Ouga	Topo-edaphic	80 2300 6 10		Canyons, scarps and mountains; widely varied slope characteristics; parent material from sandstone.	30
2.3 Typic Udorthents, — sandy-skel., mixed, mesic	— * gravelly CBV sandy loam —	LSM 6 -1	Psmeg/Pipo/Jude2/Quar/Arpr	Topo-edaphic	75 2200 8 12		Canyons, scarps and mountains; complex slopes averaging 10 meters in length with 70 percent grades; parent material is derived from sandstone.	20
2.4 Typic Ustorthents, — sandy-skel., mixed, mesic	— * gravelly CBV sandy loam —	LSM 5 +1	Pipo/Jude2/Quar/Rone/Arpr	Topo-edaphic	70 2100 9 13		Mountains; complex slopes averaging 10 meters in length with 45 percent grades; parent material is derived from sandstone.	20
2.5								
2.6	* Bordelline	to	CBX, STV					

3.0 Estimated Soil Properties.

3.1 Rock outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover			
														—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Typic Udorthents, LSC, 6, 0, sandy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	stvls	8	65	40	60	5-10	15	NP	SM	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	201.	6.7	10.7	1.6
											Hard	ss	.15	% Veg. Ground Cover			
														0	80	70	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	10	60	0

3.3 Typic Udorthents, LSM, 6, -1, sandy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	grvls	4	30	65	35	0-5	10	NP	SP	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	201.	6.7	10.7	1.6
											Hard	ss	.15	% Veg. Ground Cover			
														0	80	70	85

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	10	60	0

3.4 Typic Ustorthents, LSM, 5, +1, sandy-skeletal, mixed, mesic, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-86	cbvls	6	60	45	55	10-20	10	NP	SP	Low	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	93.8	6.7	6.5	1.3
											Hard	ss	.15	% Veg. Ground Cover			
														0	65	65	80

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	3	30	10	60	0

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6405
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—	—	—	—
Forage	—	—	—	—
Forage (maximum)	—	—	—	—
Timber		Site Index		
Ponderosa Pine	—	—	—	—
Fuelwood		cd/ac		
Pinyon/Juniper	—	—	—	—
Potential for:		Rating		
Revegetation	—	—	—	—
Reforestation	—	—	—	—
Source Suitability:				
Topsoil	—	—	—	—
Roadfill	—	—	—	—
Wildlife Habitat Suit:				
Bald Eagle	Essential	Essential	Essential	Essential
Golden Eagle	Essential	Essential	Essential	Essential
Cliff Swallow	Essential	Essential	Essential	Essential
Canyon Wren	Essential	Essential	Essential	Essential
Limitations For:				
Timber Harvest	—	—	—	—
Cutbank Stability	—	—	—	—
Unsurfaced Roads	—	—	—	—
Trails	—	—	—	—
Campgrounds	—	—	—	—
Wheeled O.R.V.	—	—	—	—
Management Problems:				
Erosion(Sheet & Rill)	—	Severe	Severe	Severe
Mass Wasting	—	Severe	Severe	Severe
Windthrow	—	—	—	—
Plant Competition	—	—	—	—

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Abies concolor	Abco	—	10	—	—
Juniperus deppeana	Jude2	—	—	1	10
Pinus strobiformis	Pist2	—	10	—	—
Pseudotsuga menziessii gl.	Psmeg	—	40	10	—
Quercus arizonica	Quar	—	—	10	30
Quercus gambelii	Ouga	—	10	10	T
Pinus Ponderosa	Pipo	—	10	20	30
Shrubs:					
Arctostaphyllos pringelii	Arpr	—	—	1	4
Ceanothus fendlerii	Cefe	—	T	1	2
Robinia neomexicana	Rone	—	T	1	2
Forbs:					
Pteridium aquilinium	Ptaq	—	1	1	T
Graminoids:					
Poa fendleriana	Pofe	—	1	1	1

— 18 15 6 87
79

6.0 Mangement Implications:

6.1 —

6.2 —

6.3 —

6.4 —

Notes: Wildlife interpretations are based on landform and geographic location. Plant listing is from field notes.

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TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 6652 - Typic Eutrochrepts, LSM, 6, -1, loamy-skeletal, mixed, mesic, deep, gravelly sandy loam: Psmeq/Pipo/Jude2/Quar/Arpr, 40-120% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on very steep mountain slopes. Mean annual precipitation ranges from 70 to 85 centimeters; mean annual air temperature ranges from 8 to 10 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on this map unit from mid-December to March. This map unit has a mean annual snowfall of 170 centimeters and a mean annual snow accumulation of 30 centimeters. The freeze free period is 150 days. Elevations range from 2000 to 2400 meters. Delineations are irregular in shape and vary in size from 30 to 400 hectares. This map unit is characterized by a dendritic drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Eutrochrepts, — loamy-skel., mixed, mesic	deep gravelly sandy loam —	LSM 6 -1	Psmeq/Pipo/ Jude2/Quar/ Arpr	Edaphic	72 cm / 2200 m / 8 deg.C / 12 deg.C	Mountains; complex convex slopes averaging 10 meters in length with a gradient of 60 percent; parent material is derived from granite, rhyolite and quartzite	90
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5 Rock outcrop	—	—	—	—	— cm / m / deg.C / deg.C	—	10
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Eutrochrepts, LSM, 6, -1, loamy-skeletal, mixed, mesic, deep, gravelly sandy loam

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
25-100	stxcl	27	75	55	45	30-40	25	10	GC	Low.	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	164.	6.7	24.8	1.3
											Hard	—	.15	% Veg. Ground Cover 0	75	45	85

Management Implications: Needle cast is the primary erosion deterrent on these soils. Removal of the surface litter layer will cause accelerated soil loss.

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	4	20	5	40	35

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 6652
Present Major Uses: Range, Recreation, Wildlife, Timber
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management, Timber

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing	lb/ac/yr - Dry Weight			
Herbaceous/woody	300			
Forage	50			
Forage (maximum)	1500			
Timber	Site Index			
Ponderosa Pine	65			
Douglas Fir	70			
Fuelwood	—	cd/ac		
Potential for:	Rating			
Revegetation	Severe			
	Too steep			
Reforestation	Severe			
	Too steep			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	Poor			
	Too steep			
Wildlife Habitat Suit:				
Mule Deer	Important			
Turkey	Important			
Red Squirrel	Essential			
Elk	Essential			
Clark's Nutcracker	Essential			
Steller's Jay	Important			
Cassin's Finch	Essential			
Limitations For:				
Timber Harvest	Severe			
	Too steep			
Cutbank Stability	Severe			
	Too steep			
Unsurfaced Roads	Severe			
	Too steep			
Trails	Severe			
	Too steep			
Campgrounds	Severe			
	Too steep			
Wheeled O.R.V.	Severe			
	Too steep			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
Mass Wasting	Severe			
	Slumps			
Windthrow	Slight			
Plant Competition	Severe			
	Quar			
	Rona			
	Arpr			

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	4			
Pinus Ponderosa	Pipo	45			
Pseudotsuga menziesii gl.	Psmeg	25			
Quercus arizonica	Quar	1			
Quercus gambelii	Ouga	T			
Shrubs:					
Arctostaphylos pringelii	Arpr	2			
Ceanothus fendleri	Cefe	2			
Robinia neomexicana	Rone	1			
Forbs:					
Achillea millefolium lan.	Acmil	6			
Pteridium aquilinium	Ptaq	5			
Verbascum thapsis	Veth	4			
Graminoids:					
Leptochloa dubia	Ledu	T			
Poa fendleriana	Pofe	1			
Poa pratensis	Popr	1			

6.0 Mangement Implications:

6.1 Steep slopes restrict most management activities.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 09/03/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 7606 - Aridic Haplustalfs, LSM, 3, thermic: Prve, 0-15% slopes

Setting: This map unit consists of a single terrestrial ecosystem component, which occurs on nearly level to strongly sloping convex elevated plains bounded by hills. Mean annual precipitation ranges from 40 to 45 centimeters; mean annual air temperature ranges from 16 to 18 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze-free period is 220 days. Elevations range from 1200 to 1400 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 100 hectares. Sheet, rill and gully erosion occurs is conspicuous throughout the map unit, as is evidence of mechanized disturbance. This mapping unit is characterized by a dendritic natural drainage pattern, with man-made contours.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Unit Comp %
2.1 Aridic Haplustalfs, — — thermic	--- — — —	LSM 3 0	Prve	Zootic	44 cm / 1300 m / 16 deg.C / 20 deg.C	Elevated plains altered by machinery; slope length and gradient vary widely; Parent material derived from alluvium and Gila conglomerate.	100
2.2					cm / m / deg.C / deg.C		
2.3					cm / m / deg.C / deg.C		
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Aridic Haplustalfs, LSM, 3, thermic

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover 0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K				
														% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 7606
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	300			
Forage	50			
Forage (maximum)	200			
Timber		Site Index		
Ponderosa pine	—			
Fuelwood		cd/ac		
Pinyon/juniper	—			
Potential for:		Rating		
Revegetation	Low			
Reforestation	—			
Source Suitability:				
Topsoil	Poor			
	Too thin			
Roadfill	—			
	—			
Wildlife Habitat Suit:				
Gambel's Quail	Important			
Mule Deer	—			
Javelina	—			
Pyrrhuloxia	—			
Phainopepla	—			
Ash-throated Flycatcher	—			
Limitations For:				
Timber Harvest	—			
Cutbank Stability	Slight			
Unsurfaced Roads	Slight			
Trails	Slight			
Campgrounds	Slight			
	(0-5% slope)			
Wheeled O.R.V.	Slight			
Management Problems:				
Erosion(Sheet & Rill)	Severe			
	Localized			
Mass Wasting	—			
Windthrow	—			
Plant Competition	—			

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Cercidium microphyllum	Cemi2	1			
Cereus giganteus	Cegi	T			
Juniperus erythrocarpa	Juer	2			
Shrubs:					
Acacia constricta	Acco2	T			
Acacia greggii	Acgr	2			
Agave	AGAVE	T			
Baccharis pteroniodes	Bapt2	T			
Berberis haematocarpa	Beha	2			
Calliandra eriophylla	Caer	10			
Canotia holacantha	Caho3	1			
Ceanothus greggii	Cegr	50			
Dasylirion wheeleri	Dawh2	1			
Fouquieria splendens	Fosp2	10			
Krameria parvifolia gland.	Krpag	50			
Mimosa biuncifera	Mibi3	2			
Opuntia engelmannii	Open2	1			
Opuntia fulgida	Opfu	T			
Opuntia spinosior	Opsp	T			
Prosopis velutina	Prve	1			
Yucca baccata	Yuba	50			
Yucca elata	Yuel	1			
Forbs:					
Astralagus	ASTRA	10			
Erodium cicutarium	Erci	T			
Gutierrezia sarothrae	Gusa2	10			
Haplopappus	HAPLO2	1			
Gramminoids:					
Aristida	ARIST	10			
Bouteloua curtipendula	Bocu2	10			
Bouteloua eriopoda	Boer4	10			
Hilaria belangeri	Hibe	1			

6.0 Mangement Implications:

6.1 This map unit has been degraded from Grama-Tobosa grassland, with soil loss greatly accelerated by machinery; soil loss has progressed to the point that recovery is highly unlikely.

6.2

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/16/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 8356 - Typic Ustochrepts, LSM, 4, 0, calcareous, mixed, mesic: Pimo/Juos/Qutu2/Arpu5/Caho3 - Badlands complex, 15-80% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate, inseparable pattern on severely eroded hills bounded by plains. TEC .1 is the classifiable soil component, while TEC .2 is so severely eroded that it must be classified as badlands. Mean annual precipitation ranges from 45 to 55 centimeters; mean annual air temperature ranges from 15 to 16 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Mean annual snowfall is 30 centimeters. The freeze free period is 200 days. Elevations range from 1000 to 1500 meters. Delineations are irregular in shape and vary in size from 10 to 1600 hectares. Sheet, rill and gully erosion is conspicuous throughout the map unit. The characteristic drainage pattern is dendritic.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP ME MAST MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Ustochrepts, calcareous, mixed, mesic	— — — —	LSM 4 0	Pimo/Juos/ Qutu2/Arpu5/ Caho3	Topo-edaphic	50 cm 1500 m 15 deg.C 17 deg.C	Hills; complex slopes with an average length of 15 meters and a gradient of 25 percent; parent material is derived from carbonate enriched mixed sources.	70
2.2 Badlands	—	—	—	—	— cm m deg.C deg.C	Hills; severely eroded calcareos material	25
2.3					cm m deg.C deg.C		
2.4					cm m deg.C deg.C		
2.5 Rock outcrop	—	—	—	—	— cm m deg.C deg.C	—	5
2.6					cm m deg.C deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, 0, calcareous, mixed, mesic.

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	—	—	—	—
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	—	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Badlands

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock		Factor	—	—	—	—
											Hard.	Kind	K	% Veg. Ground Cover			
											—	—	—	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock		Factor				
											Hard.	Kind	K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 8356
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	700	—		
Forage	50	—		
Forage (maximum)	200	—		
Timber		Site Index		
Ponderosa pine	—	—		
Fuelwood		cd/ac		
Pinyon/juniper	4	—		
Potential for:		Rating		
Revegetation (drill)	Low	—		
	Too alkaline			
Reforestation	—	—		
Source Suitability:				
Topsoil	Poor	—		
	Too thin			
Roadfill	—	—		
Wildlife Habitat Suit:				
Mule Deer	Used	—		
Desert Cottontail	Used	—		
Pinyon Jay	Used	—		
Gambel Quail	Used	—		
Pinyon Mouse	Used	—		
Limitations For:				
Timber Harvest	—	—		
Cutbank Stability	—	—		
Unsurfaced Roads	—	—		
Trails	—	—		
Campgrounds	—	—		
Wheeled O.R.V.	—	—		
Management Problems:				
Erosion(Sheet & Rill)	Severe	Severe		
Mass Wasting	—	Severe		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
		% Canopy Cover			
Trees:					
Juniperus monosperma	Jumo	T	—		
Juniperus osteosperma	Juos	5	—		
Pinus monophylla	Pimo	2	—		
Shrubs:					
Acacia greggii	Acgr	T	—		
Arctostaphylos pungens	Arpu5	3	—		
Baccharis pteronioides	Bapt	T	—		
Canotia holacantha	Caho3	15	—		
Cercocarpus montana	Cemo2	T	—		
Cowania neomexicana stans.	Comes	T	—		
Dasylirion wheelerii	Dawh2	1	—		
Garrya wrightii	Gawr	T	—		
Krameria parvifolia gland.	Krpag	T	—		
Mimosa biuncifera	Mibi3	1	—		
Nolina microcarpa	Nomi	T	—		
Opuntia engelmannii	Open2	T	—		
Prosopis velutina	Prve	A	—		
Quercus turbinella	Qutu2	5	—		
Forbs:					
Eriogonum	ERIOG	T	—		
Erodium cicutarium	Erci	T	—		
Gutierrezia sarothrae	Gusa2	1	—		
Graminoids:		—	—		

6.0 Management Implications:

6.1 Structural improvement will probably be required to stabilize these soils.

6.2 This component should be stabilized by structural methods.

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 8/27/85
Survey Area: Tonto National Forest, Northern Portion
Map Symbol and Name: 9175 - Typic Haplustalfs, LSM, 4, mesic: Quem/Cemo2 - Rock outcrop complex, 40-120% slopes

Setting: This map unit consists of two terrestrial ecosystem components, which occur in an intricate pattern and are not separable. They occur on steep to extremely steep mountain slopes associated with scarps and canyons. TEC .1 occurs on warm aspects and shows evidence of repeated burning. TEC .2 occurs as rock outcrop in a random complex throughout the map unit. Mean annual precipitation ranges from 50 to 55 centimeters; mean annual air temperature ranges from 13 to 15 degrees Celsius. Approximately 55 percent of the annual precipitation occurs during the period 1 October to 31 March and winters are mild (LSM). This map unit has a mean annual snowfall of 40 centimeters. The freeze free period is 190 days. Elevations range from 1500 to 1800 meters on all aspects. Delineations are irregular in shape and vary in size from 15 to 1500 hectares. Rill and gully erosion is conspicuous within the map unit. This map unit is characterized by a parallel drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MT / MAST / MSST (cm / m / deg.C / deg.C)	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Typic Haplustalfs, — — — mesic	--- — — —	LSM 4	Quem/Cemo2	Fire-edaphic	--- — — —	Mountains; complex slopes with an average length of 10 meters and a gradient of 60 percent parent material is derived from mixed sources.	65
2.2 Rock Outcrop	—	—	—	—	—	—	20
2.3							
2.4							
2.5 Typic Ustochrepts — — — mesic	— — — —	LSM 4	Quem/Cemo2	Fire-edaphic	— — — —	Mountains; complex slopes of varying lengths. parent material is derived from mixed sources.	1
2.6							

3.0 Estimated Soil Properties.

3.1 Typic Haplustalfs, LSM, 4, mesic

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	0	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Compo. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Rock Outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Compo. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Compo. RF >2mm	Veg. BA	Lit.	Soil

3.4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
														Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			

Management Implications:

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Compo. RF >2mm	Veg. BA	Lit.	Soil

205

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 9175
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	600	—		
Forage	50	—		
Forage (maximum)	—	—		
Timber		Site Index		
Ponderosa Pine	—	—		
Fuelwood		cd/ac		
Pinyon/Juniper	—	—		
Potential for:		Rating		
Revegetation	Severe	—		
	Too steep	—		
Reforestation	—	—		
	—	—		
Source Suitability:				
Topsoil	Poor	—		
	Too thin	—		
Roadfill	Poor	—		
	Too steep	—		
Wildlife Habitat Suit:				
Mule Deer	Important	—		
B.T. Gray Warbler	Essential	—		
Pinyon Mouse	Important	—		
Pinyon Jay	Important	—		
Desert Cottontail	Important	—		
Gambel's Quail	Important	—		
Limitations For:				
Timber Harvest	—	—		
	—	—		
Cutbank Stability	Severe	—		
	Too steep	—		
Unsurfaced Roads	Severe	—		
	Slope	—		
Trails	Severe	—		
	Too steep	—		
Campgrounds	Severe	—		
	Too steep	—		
Wheeled O.R.V.	Severe	—		
	Erosion	—		
Management Problems:				
Erosion(Sheet & Rill)	Severe	—		
Mass Wasting	—	—		
Windthrow	—	—		
Plant Competition	—	—		

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	5	—		
Pinus monophylla	Pimo	T	—		
Quercus arizonica	Quar	T	—		
Quercus emoryii	Quem	20	—		
Juniperus osteosperma	Juos	T	—		
Shrubs:					
Arctostaphylos pringelli	Arpr	T	—		
Arctostaphylos pungens	Arpu5	10	—		
Cercocarpus montana	Cemo2	30	—		
Quercus turbinella	Qutu2	10	—		
Forbs:					
Eriogonum	ERIOG	10	—		
Psoralia tenuiflora	Pste3	T	—		
Gutierrezia sarothrae	Gusa2	5	—		
Graminoids:					
Agropyron smithii	Agsm	10	—		
Andropogon saccharoides	Ansa	10	—		
Aristida	ARIST	10	—		
Bouteloua curtipendula	Bocu2	50	—		
Bouteloua hirsuta	Bohi2	50	—		
Bouteloua gracilis	Bogr2	10	—		
Koeleria cristata	Kocr	10	—		
Leptochloa dubia	Ledu	T	—		
Lycurus phleoides	Lyph	10	—		
Muhlenbergia longiligula	Mulo	10	—		
Panicum obtusum	Paob	T	—		
Poa fendleriana	Pofe	10	—		
Sitanion hystrix	Sihy	10	—		

6.0 Management Implications:

6.1 Primary management objective should be to maintain slope in a meta-stable state; steep slopes preclude most activities.

6.2 —

6.3

6.4

Notes:

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 9239 - Torriorthents, LSM, 2: Cam12 - Ustorthents, LSM, 3: Prve - Ustochrepts, LSM, [illegible] - Rock outcrop undifferentiated group, 40-120% slopes

Setting: This map unit consists of four terrestrial ecosystem components, which occur on very steep to extremely steep mountain slopes, scarps and canyons as an undifferentiated group. Mean annual precipitation ranges from 30 to 45 centimeters; mean annual air temperature ranges from 17 to 20 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze free period is 220 to 260 days. Elevations range from 700 meters on north aspects to 1200 meters on south aspects. Delineations are irregular in shape and vary in size from 25 to 3400 hectares. This map unit is characterized by a parallel drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / ME / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Torriorthents	—	LSM 2	Cam12	Edaphic	— cm / — m / — deg.C / — deg.C	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	40
2.2 Ustorthents	—	LSM 3	Prve	Edaphic	— cm / — m / — deg.C / — deg.C	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	20
2.3 Ustochrepts	—	LSM 3	Prve	Edaphic	— cm / — m / — deg.C / — deg.C	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	20
2.4 Rock Outcrop	—	—	—	—	— cm / — m / — deg.C / — deg.C	—	20
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Torriorthents, LSM, 2

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Ustorthents, LSM, 3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3 Ustochrepts, LSM, 3

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.4 Rock Outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 9Z39
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—	—	—	—
Forage	—	—	—	—
Forage (maximum)	—	—	—	—
Timber		Site Index		
Ponderosa Pine	—	—	—	—
Fuelwood		cd/ac		
Pinyon/Juniper	—	—	—	—
Potential for:		Rating		
Revegetation	—	—	—	—
Reforestation	—	—	—	—
Source Suitability:				
Topsoil	—	—	—	—
Roadfill	—	—	—	—
Wildlife Habitat Suit:				
Bald Eagle	Essential	Essential	Essential	—
Golden Eagle	Essential	Essential	Essential	—
Cliff Swallow	Essential	Essential	Essential	—
Canyon Wren	Essential	Essential	Essential	—
Limitations For:				
Timber Harvest	—	—	—	—
Cutbank Stability	—	—	—	—
Unsurfaced Roads	—	—	—	—
Trails	—	—	—	—
Campgrounds	—	—	—	—
Wheeled O.R.V.	—	—	—	—
Management Problems:				
Erosion(Sheet & Rill)	—	—	—	—
Mass Wasting	—	—	—	—
Windthrow	—	—	—	—
Plant Competition	—	—	—	—

5.0 Composition of Plant Community:

Map Unit Components	Symbol	5.1	5.2	5.3	5.4
Scientific Name		% Canopy Cover			
Trees:					
Cercidium floridum	Cefl2				
Cercidium microphylum	Cemi2				
Cereus giganteus	Cegi				
Juniperus erythrocarpa	Juer				
Juniperus monosperma	Jumo				
Prosopis velutina	Prve				
Shrubs:					
Acacia greggii	Acgr				
Calliandra eriophylla	Caer				
Canotia holacantha	Caho3				
Ceanoyhus greggii	Cegr				
Condalia spathulata	Cosp3				
Dasylirion wheeleri	Dawh2				
Dodonea viscosa	Dovi				
Fouquieria splendens	Fosp2				
Krameria parvifolia gl.	Krpag				
Larrea divaricata	Ladi2				
Mimosa bifurcata	Mibi3				
Nolina microcarpa	Nomi				
Opuntia engelmannii	Open2				
Simmondsia chinensis	Sich				
Yucca baccata	Yuba				
Yecca elata	Yuel				
Forbs:					
Baccharis pteroniodes	Bapt				
Datura meteloides	Dame2				
Eriogonum	ERIOG				
Gutierrezia sarothrae	Gusa2				
Haplopappus	HAPLO2				
Graminoids:					
Aristida	ARIST				
Bouteloua curtipendula	Bocu2				
Bouteloua eriopoda	Boer4				
Muhlenbergia porteri	Mupo				

6.0 Mangement Implications:

6.1 —

6.2 —

6.3 —

6.4 —

Notes: Wildlife interpretations are based on landform and geographic location. Plant listing is a presence list for reference.

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 9349 - Haplustalfs, LSM, 4: Juos - Ustorthents, LSM, 4: Juos - Ustochrepts, LSM, 4: Juos - Rock outcrop undifferentiated group, 40-120% slopes

Setting: This map unit consists of four terrestrial ecosystem components, which occur on very steep to extremely steep mountain slopes, scarps and canyons as an undifferentiated group. Mean annual precipitation ranges from 45 to 58 centimeters; mean annual air temperature ranges from 12 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). The freeze free period is 190 to 210 days. Elevations range from 1200 meters on north aspects to 1700 meters on south aspects. Delineations are irregular in shape and vary in size from 10 to 9300 hectares. This map unit is characterized by a parallel drainage pattern.

* Soils are mostly mod. deep to Deep

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase *	Clim. Class	Vegetation	Climax Class	MAP cm / MAT deg.C	ME m / MST deg.C	Landform; Slope Characteristics; Parent Material.	Map Comp %
2.1 Haplustalfs	—	LSM 4	Juos	Edaphic	—	—	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	40
2.2 Ustorthents	—	LSM 4	Juos	Edaphic	—	—	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	20
2.3 Ustochrepts	—	LSM 4	Juos	Edaphic	—	—	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	20
2.4 Rock Outcrop	—	—	—	—	—	—	—	20
2.5								
2.6								

3.0 Estimated Soil Properties.

3.1 Haplustalfs, LSM, 4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.2 Ustorthents, LSM, 4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.3 Ustochrepts, LSM, 4

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

3.4 Rock Outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	% Veg. Ground Cover			
											—	—	—	—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF >2mm	Veg. BA	Lit.	Soil
—	—	—	—	—	—	—

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 9349
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—	—	—	—
Forage	—	—	—	—
Forage (maximum)	—	—	—	—
Timber		Site Index		
Ponderosa Pine	—	—	—	—
Fuelwood		cd/ac		
Pinyon/Juniper	—	—	—	—
Potential for:		Rating		
Revegetation	—	—	—	—
Reforestation	—	—	—	—
Source Suitability:				
Topsoil	—	—	—	—
Roadfill	—	—	—	—
Wildlife Habitat Suit:				
Bald Eagle	Essential	Essential	Essential	—
Golden Eagle	Essential	Essential	Essential	—
Cliff Swallow	Essential	Essential	Essential	—
Canyon Wren	Essential	Essential	Essential	—
Limitations For:				
Timber Harvest	—	—	—	—
Cutbank Stability	—	—	—	—
Unsurfaced Roads	—	—	—	—
Trails	—	—	—	—
Campgrounds	—	—	—	—
Wheeled O.R.V.	—	—	—	—
Management Problems:				
Erosion(Sheet & Rill)	—	—	—	—
Mass Wasting	—	—	—	—
Windthrow	—	—	—	—
Plant Competition	—	—	—	—

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Jude2				
Juniperus monosperma	Jumo				
Juniperus osteosperma	Juos				
Juniperus erythrocarpa	Juer				
Quercus emoryii	Quem				
Prosopis velutina	Juos				
Shrubs:					
Agave	AGAVE				
Arctostaphylos pungens	Arpu5				
Berberis haematocarpa	Beha				
Canotia holacantha	Caho3				
Ceanothus greggii	Cegr				
Cercocarpus montanus	Cemo2				
Dasylirion wheeleri	Dawh2				
Garrya wrightii	Gawr3				
Mimosa bifurcata	Mibi3				
Nolina microcarpa	Nomi				
Opuntia engelmannii	Open2				
Quercus turbinella	Qutu2				
Rhamnus crocea	Rhcr				
Rhus ovata	Rhov				
Yucca baccata	Yuba				
Yucca elata	Yuel				
Forbs:					
Baccharis pteroniodes	Bapt				
Gutierrezia sarothrae	Gusa2				
Graminoids:					
Aristida	ARIST				
Bouteloua curtipendula	Bocu2				
Bouteloua hirsuta	Bohi2				
Eragrostis intermedia	Erin				
Koeleria cristata	Kocr				
Sitanion hystrix	Sihy				

6.0 Mangement Implications:

6.1 —

6.2 —

6.3 —

6.4 —

Notes: Wildlife interpretations are based on landform and geographic location. Plant listing is a presence list for reference.

TERRESTRIAL ECOSYSTEM SURVEY
Map Unit Description, Properties and Selected Interpretations

USDA-FS
2550-7
01/07/85

1.0 Date: 9/05/85

Survey Area: Tonto National Forest, Northern Portion

Map Symbol and Name: 9459 - Typic Ustochrepts, LSM, 4, +1, mesic: Pimo/Juda2/Jwos/Quar/Outu2/Arpu5 - Udic Ustochrepts, LSM, 5, 0, mesic: Pipo/Juda2/Quar/Arpu5/Arpr - Rock outcrop association, 40-120% slopes

Setting: This map unit consists of three terrestrial ecosystem components, which occur on mountain slopes and canyons as an aspect controlled association. TEC .1 occurs on south aspects, TEC .2 occurs on north aspects and TEC .3 occurs as rock outcrop, randomly occuring throughout the map unit. Mean annual precipitation ranges from 55 to 65 centimeters; mean annual air temperature ranges from 12 to 17 degrees Celsius. Approximately 55 percent of the mean annual precipitation occurs during the period of 1 October to 31 March and winters are mild (LSM). Patchy snow cover normally exists on TEC .2 from December to March. This map unit has a mean annual snowfall of 90 centimeters and an accumulation of 10 centimeters. The freeze free period is 190 to 210 days. Elevations range from 1600 meters on north aspects to 1900 meters on south aspects. Delineations are irregular in shape and vary in size from 20 to 500 hectares. This map unit is characterized by a parallel drainage pattern.

2.0 Map Unit Components, Characteristics and Composition.

Soil	Phase	Clim. Class	Vegetation	Climax Class	MAP / MT / MAST / MSST	Landform; Slope Characteristics; Parent Material.	Ma / C
2.1 Typic Ustochrepts, — — — mesic	— — —	LSM 4 +1	Pimo/Juda2/ Jwos/Quar/ Outu2/Arpu5	Edaphic	60 cm / 1700 m / 13 deg.C / 16 deg.C	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	4
2.2 Udic Ustochrepts, — — — mesic	— — —	LSM 5 0	Pipo/Juda2/ Quar/Arpu5/ Arpr	Edaphic	60 cm / 1700 m / 10 deg.C / 14 deg.C	Canyons, scarps and mountains; widely varied slope characteristics; Parent material from mixed sources.	40
2.3 Rock Outcrop	—	—	—	—	— cm / — m / — deg.C / — deg.C	—	15
2.4					cm / m / deg.C / deg.C		
2.5					cm / m / deg.C / deg.C		
2.6					cm / m / deg.C / deg.C		

3.0 Estimated Soil Properties.

3.1 Typic Ustochrepts, LSM, 4, +1, mesic

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover			
														—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	—	>2mm	BA		

3.2 Udic Ustochrepts, LSM, 5, 0, mesic

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover			
														—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	—	>2mm	BA		

3.3 Rock outcrop

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover			
														—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	—	>2mm	BA		

3.4 —

Depth cm	USDA Texture	% by Wt. (size: mm) <.002	> 75	5-75	% Pass. Sieve No 4	No 200	Liquid Limit	Plast. Index	Unified Class.	Shrink Swell	Soil Wetness Depth	Durat.	Months	Sheet/Rill Erosion Pot.	Tol.	Cur.	Nat.
—	—	—	—	—	—	—	—	—	—	—	—	—	—	Rate - t/ha/yr			
											Bedrock Hard.	Kind	Factor K	—	—	—	—
											—	—	—	% Veg. Ground Cover			
														—	—	—	—

Management Implications: —

Erosion Class Water	Wind	Organic Matter %	% Cur. Surface Comp. RF	Veg.	Lit.	Soil
—	—	—	>2mm	BA		

TERRESTRIAL ECOSYSTEM SURVEY
Interpretations

Map Symbol: 9459
Present Major Uses: Range, Recreation, Wildlife
Potential Forseeable Uses: Range, Recreation, Wildlife, Watershed Management

4.0 Interpretations for Selected Uses:

Map Unit Components	4.1	4.2	4.3	4.4
Potential Productivity				
Grazing		lb/ac/yr - Dry Weight		
Herbaceous/woody	—	—	—	—
Forage	—	—	—	—
Forage (maximum)	—	—	—	—
Timber		Site Index		
Ponderosa Pine	—	—	—	—
Fuelwood		cd/ac		
Pinyon/Juniper	—	—	—	—
Potential for:		Rating		
Revegetation	—	—	—	—
Reforestation	—	—	—	—
Source Suitability:				
Topsoil	—	—	—	—
Roadfill	—	—	—	—
Wildlife Habitat Suit:				
Bald Eagle	Essential	Essential	Essential	—
Golden Eagle	Essential	Essential	Essential	—
Cliff Swallow	Essential	Essential	Essential	—
Canyon Wren	Essential	Essential	Essential	—
Limitations For:				
Timber Harvest	—	—	—	—
Cutbank Stability	Severe	Severe	—	—
Unsurfaced Roads	—	—	—	—
Trails	—	—	—	—
Campgrounds	—	—	—	—
Wheeled O.R.V.	—	—	—	—
Management Problems:				
Erosion(Sheet & Rill)	—	—	—	—
Mass Wasting	Severe Slides	Severe Slides	—	—
Windthrow	—	—	—	—
Plant Competition	—	—	—	—

5.0 Composition of Plant Community:

Map Unit Components		5.1	5.2	5.3	5.4
Scientific Name	Symbol	% Canopy Cover			
Trees:					
Juniperus deppeana	Juda2	10	8		
Juniperus osteosperma	Juos	1	—		
Pinus monophylla	Pimo	15	—		
Pinus ponderosa	Pipo	—	30		
Quercus arizonica	Quar	2	1		
Quercus emoryii	Quem	2	1		
Shrubs:					
Agave	AGAVE	T	—		
Arctostaphylos pungens	Arpu5	15	5		
Arctostaphylos pringelii	Arpr	T	3		
Baccharis pteronioides	Bapt	.10	T		
Cercocarpus montana	Cemo2	3	—		
Garrya wrightii	Gawr3	2	—		
Quercus turbinella	Qutu2	12	—		
Rhamnus crocea illicifolia	Rhcri	T	—		
Robinia neomexicana	Rone	—	1		
Forbs:					
Achillia millifolia lan.	Acmil	—	4		
Eriogonum	ERIOG	1	—		
Gutierrezia sarothrae	Gusa2	1	—		
Graminoids:					
Agropyron smithii	Agsm	.10	.50		
Andropogon saccharoides	Ansa	.10	—		
Bouteloua curtipendula	Bocu2	1	.50		
Leptochloa dubia	Ledu	.10	.50		
Muhlenbergia longiligula	Mulo	.10	.50		
Muhlenbergia montana	Mumo	.10	.50		
Poa fendleriana	Pofe	.10	1		
Sitanion hystrix	Sihy	1	.10		

6.0 Mangement Implications:

6.1 —

6.2 —

6.3 —

6.4 —

Notes: Wildlife interpretations are based on landform and geographic location. Plant listing is a presence list for reference, with estimated canopy covers corrected for steep slopes.

Classification

Soil

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Terrestrial ecosytem surveys utilizes five categories of this system: order, suborder, great group, subgroup and family. Classification is based, on observed and/or inferred data from the field of soil science and other related disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. Categories of the system are discussed in the following paragraphs:

ORDER. Ten soil orders are recognized as categories in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in "sol". An example is Alfisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to growth or that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Boralf (Bor, meaning cool, plus alf, from Alfisol).

GREAT GROUP Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about properties of the soil. An example is Cryoboralfs, (Cry, indicating cool summers, plus boralf, the suborder of the Alfisols that have cryic or frigid temperature regimes).

SUBGROUP. Each great group may be divided into subgroups: (1) The central (typic) concept of the great group, which is not necessarily the most extensive subgroup; (2) The intergrades, or transitional forms to other orders, suborders, or great groups; and (3) the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. An example is Typic Cryoboralfs.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentia. An example is loamy-skeletal, mixed, Typic Cryoboralfs.

Vegetation

The vegetation classification system is based upon the lands potential for vegetation development. The potential or climax vegetation is assumed to reflect climatic factors at the broadest classification level. Lower levels of the system are influenced by local factors of climate, soil, animals, fire, and other environmental influences. The system is hierachical, consisting of five levels or ranks of generalization. These ranks and their approximate scale are as follows:

	RANK	SCALE	
1.	Class	Global	1:10,000,000
2.	Formation	Continental	1:3,000,000
3.	Series	Subcontinental	1:500,000
4.	Subseries	Regional	1:50,000
5.	Association	Local	1:5,000

Vegetation within each rank is classified into mutually exclusive sets (or states) which are presumed to reflect the overriding influence of climate at the appropriate scale. This is referred to as the climatic climax vegetation. In addition, there are anomalias or departures from the expression of the climatic climax which are most evident at the Series, Subseries, and Association ranks. These departures are maintained in the potential expression of vegetation by sustained or episodic influences of fire, grazing animals, special soils, and local relief anomalies. These are referred to as fire zootic, edaphic, or topographic climaxes. Such names merely allude to generalized causes and not to the particular mechanisms of ecological or historical interactions that bring about the departure of vegetation from its climatic climax expression.

Each level of classification represents an opportunity for predicting successional trends, assessing biotic potentials (including productivity), assessing management opportunities and limitations, and cataloging information. The ranks are defined as follows:

CLASS. Classes of vegetation represent broad structural groupings based upon gross aspects of climate at the global scale. The states of this class occurring in Region 3 are Forest, Woodland, Scrub, and Herbaceous vegetation (Unesco 1973).

FORMATION. Vegetation with similar structural form (physiognomy) is controlled primarily by climates differentiated at a continental scale. The eight formation states in the Southwest are (from coldest to warmest climates respectively) alpine tundra, coniferous forest, deciduous forest, coniferous woodland, evergreen oak woodland, chaparral, grassland, and desert.

SERIES. Each state within this rank consists of vegetation having the same potential dominant species at climax. In the climatic series there is a degree of climatic homogeneity that reflects the requirements and tolerances of the dominant indicator plants. There are approximately 17 climatic series in Region 3 (Layser and Schubert 1979, Moir 1982).

SUBSERIES. Regionalized differences in macroclimates and floristics result in different combinations of dominant plants occurring in different geographic areas of the Southwest. Floristics refers to the taxonomic assemblage of plants in any area, their geographic ranges, and evolutionary and migratory history. Each combination of dominant plants in the climatic climax constitutes a Subseries state (or vegetation Subseries). The vegetation Subseries ordered along a climatic gradient (generalized as a single, linear axis whose extremes represent hot-dry and cold-wet extremes) defines indirectly the primary climatic gradient of that region (Daubenmire's 1968, p 261-2).

ASSOCIATION. An association is the consistent combination of both overstory and understory climax dominants. Vegetation is relatively homogeneous as to the dominant plants of all structural layers (Daubenmire 1968 p 27).

Taxonomic Descriptions

This section contains the taxonomic legend and descriptions for both soils and vegetation. The legend and description of soils are sequenced within the order they occur in Soil Taxonomy. The descriptions for vegetation are arranged in alphabetical order by subseries name.

Characteristics of the soil and the material in which it formed are discussed for each soil. A pedon, a small three-dimensional area of soil that is typical, is described.

Following the pedon description is the range of important characteristics of the soil in the survey area.

Table 2 contains the taxonomic legend and location in the report of the taxonomic unit descriptions.

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Alfisols						
Boralfs						
Eutroboralfs						
Mollic	LSC 5 0	Pipo Quga	Edaphic			312
fine, mixed				5078*	230	312
Typic						
clayey-skeletal,mixed				5079* 5080	232	312
fine, mixed				5161 5162*	234	312
Udalfs						
Hapludalfs						
Glossoboric	LSM 6 -1	Psmeg Pipo Jude2 Quar Arpr	Edaphic			311
fine, mixed, mesic				6250* 6251 6252	236	311
loamy-skeletal, mixed, mesic				6368*	237	311
Ustalfs						
0 Haplustalfs						
Aridic	LSM 3 0	Prve Beha Bohi2 Boer4	Edaphic			304
fine-loamy, mixed, thermic				3230*	238	304

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Haplustalfs						
Aridic	LSM 3 +1	Prve Beha Acgr Gusa2	Zootic			304
clayey-skeletal, mont., thermic				3306*	239	304
loamy-skeletal, mixed, thermic				3334* 3335	240	304
Typic	LSM 4 -1	Juos Juer Prve Qutu2	Edaphic			305
clayey-skeletal,mixed, thermic				3521*	241	305
fine, mixed, thermic				3060*	243	305
fine-loamy, mixed, thermic				3371* 3261 3760 3761	245	305
loamy-skeletal, mixed, thermic				3231* 3333 3469	247	305
		Juos Juer Prve	Edaphic			305
fine, mixed, thermic				3236	243	305
fine, mont., thermic				3050*	248	305

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Haplustalfs						
Typic	LSM 4 0	Pimo Juos Qutu2 Arpu5	Edaphic			306
clayey-skeletal, mixed, mesic				3821* 3822	249	306
clayey-skeletal, mont., mesic				3712*	251	306
fine-loamy, mixed, mesic				3730* 3731 3732	252	306
		Pimo Juos Hibe	Edaphic			
fine, mont., mesic				3710	254	306
		Cugl Pimo Qutu2 Arpu5	Topo-fire			306
clayey-skeletal, mixed, mesic				4468	249	306
loamy-skeletal, mixed, mesic				4469	256	306
	LSM 4 +1	Pimo Jude2 Juos Quar Qutu2 Arpu5	Edaphic			307
clayey-skeletal, mixed, mesic				4175 4176 5075	249	307
fine, mixed, mesic				4170* 4451 5471	253	307
fine, mont., mesic moderately deep				4161*	254	307

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Haplustalfs						
Typic	LSM 4 +1	Pimo Jude2 Juos Quar Bogr2	Edaphic			307
fine, mont., mesic				5074	254	307
		Bogr2 Jude2	Zoo-topo-edaphic	4140	254	307
		Bogr2 Jude2 Qutu2	Zootic	4061	254	307
loamy-skeletal, mixed, mesic		Quar Qutu2 Arpu5	Fire	4241*	256	307
Udic	LSM 5 -1	Pipo Pimo Jude2 Quar Qutu2 Arpu5 Arpr	Edaphic			308
clayey-skeletal, mixed, mesic				5075	260	308
fine, mixed, mesic				4451 5471	258	308
fine, mont., mesic				5074	259	308
	LSM 5 0	Pipo Jude2 Quar Arpu5 Arpr	Edaphic			309
fine, mixed, mesic				5250* 5251 5252	258	309
fine, mont., mesic		Pipo Jude2 Quar	Edaphic	5550 5551*	259	309

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Haplustalfs						
Udic	LSM 5 +1	Pipo Jude2 Quar Rone Arpr	Edaphic			310
clayey-skeletal, mixed, mesic				5651*	260	310
fine, mixed, mesic				5650	258	310
fine-loamy, mixed, mesic				5165*	262	310
loamy-skeletal, mixed, mesic				5452*	263	310
Vertic						
fine, mont., mesic	LSM 4 +1	Paob Bogr2 Jude2	Zoo-topo-edaphic	4140*	~~265~~ 270	307
fine, mont., thermic	LSM 4 -1	Juos Juer Prve Hibe	Topo-edaphic	3187*	266	305
Aridisols						
Argids						
Haplargids						
Ustalfic	LSM 2 0	Cemi2 Prve Sich	Topo-edaphic			303
fine, mixed, thermic				1120*	267	303
Orthids						
Calciorthids						
Ustochreptic		Cemi2 Cegi Prve Caho3 Ladi2	Topo-edaphic			303
coarse-loamy, mixed, thermic				1110*	269	303

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Camborthids						
Lithic	LSM 2 0	Cemi2 Cegi Prve Sich Fosp2	Edaphic			303
loamy-skeletal, mixed, thermic				1770*	271	303
Ustochreptic		Cemi2 Cegi Prve Sich	Edaphic			303
loamy-skeletal, mixed, thermic				1100* 1101	272	303
Entisols						
Fluvents						
Torrifluvents						
Typic						
thermic	LSM 2	Prve	Topo-edaphic	9*	273	303
Ustifluvents						
Typic						
thermic	LSM 3-4	Pofr2	Topo-edaphic	15*	274	305
Orthents						
Torriorthents	LSM 2	Cemi2	Topo-edaphic	9239*	275	303

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Udorthents						
Typic	LSC 6 0	Abco Psmeg Pipo Pist2 Ouga	Edaphic			312
sandy-skeletal, mixed,	frigid			6405*	276	312
	LSM 6 -1	Psmeg Pipo Jude2 Quar Arpr	Edaphic			311
sandy-skeletal, mixed,	mesic			6405*	277	311
Ustorthents						
Typic	LSM 5 +1	Pipo Jude2 Quar Rome Arpr	Edaphic			310
sandy-skeletal, mixed,	mesic			6405*	278	310

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Inceptisols						
Ochrepts						
Eutrochrepts						
Typic						
	LSC 5 0	Pipo Quga	Edaphic			312
loamy-skeletal, mixed, frigid				5162*	279	312
	LSM 6 -1	Psmeg Pipo Jude2 Quar Arpr	Edaphic			311
loamy-skeletal, mixed, mesic				6652*	281	311
calcareous				6368	281	311
Ustochrepts						
Fluventic					282	
mesic	LSM 4	Pofr2	Topo-edaphic	73	282	305
	LSM 5	Poan3	Topo-edaphic	26	282	308
thermic	LSM 3-4	Pofr2	Topo-edaphic	15	282	305

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Ustochrepts						
Lithic						
	LSM 3 +1	Prve Beha Fosp2	Zoo-edaphic			304
loamy-skeletal, mixed, thermic				3124*	283	304
	LSM 4 0	Quem Qutu2 Arpu5	Fire-edaphic			303
loamy-skeletal, mixed, mesic				4242*	284	303
		Cugl Pimo Qutu2 Arpu5	Topo-fire			306
loamy-skeletal, mixed, mesic				4468 4469	284	306
	LSM 4 +1	Pimo Jude2 Juos Quar Qutu2 Arpu5	Edaphic			307
loamy-skeletal, mixed, mesic				4457	284	307
		Quar Qutu2 Arpu5	Fire			307
loamy-skeletal, mixed, mesic				4241	284	307

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Ustochrepts						
Typic						
	LSM 4 0	Pimo Juos Qutu2 Arpu5	Edaphic			306
loamy-skeletal, mixed, mesic				3752 3753	285	306
	LSM 4 +1	Pimo Jude2 Juos Quar Qutu2 Arpu5	Edaphic			307
loamy-skeletal, mixed, mesic				4240* 4242 4457	285	306
	LSM 4 -1	Juos Juer Prve Qutu2	Edaphic			307
loamy-skeletal, mixed, thermic				3339*	286	307
calcareous	LSM 4 -1	Juos Juer Prve Qutu2 Caho3	Edaphic			306
coarse-loamy, mixed, thermic				3359 3360*	288	306
fine-loamy, mixed, thermic				3350* 3351 3352	290	306
loamy-skeletal, mixed, thermic				3770*	292	306

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Ustochrepts						
Typic						
calcareous	LSM 4 0	Cugl Pimo Qutu2 Arpu5 Caho3 Comes	Topo-fire-edaphic			306
fine-loamy, mixed, mesic				3355*	293	306
		Pimo Juos Qutu2 Arpu5 Caho3	Edaphic			306
loamy-skeletal, mixed, mesic				3770*	294	306
Udic						
	LSC 5 0	Pipo Quga	Edaphic			312
loamy-skeletal, mixed, frigid				5161 5162*	295	312
	LSM 5 -1	Pipo Pimo Jude2 Quar Qutu2 Arpu5 Arpr	Edaphic			307
loamy-skeletal, mixed, mesic				5350* 5351 5352	296	307
	LSM 5 0	Quar Arpu5 Arpr	Fire			307
loamy-skeletal, mixed, mesic				5103	296	307

Table 2 Taxonomic Legend

Soil Taxonomic	Climate Class	Vegetation Taxonomic	Climax Class	Map No.	Description Soil Page No.	Description Vegetation Page No.
Ustochrepts						
Udic						
calcareous	LSM 5 0	Pipo Jude2 Quar Arpu5 Comes	Edaphic			306
loamy-skeletal, mixed, mesic				5368*	298	306
Mollisols						
Borolls						
Haploborolls						
Cumulic	LSC 5	Poan3	Topo-edaphic	22*	299	311
Ustolls						
Argiustolls						
Pachic						
fine, mixed, mesic	LSM 4 +1	Bogr2 Jude2	Zoo-topo-edaphic	20*	300	307

Mollic Eutroboralfs, LSC, 5, fine, mixed

Mollic Eutroboralfs, LSC, 5, fine, mixed consists of deep, well drained soils that formed in alluvium and residuum from sandstone and shale. They are on gently sloping to rolling elevated plains with slopes of 0 to 15 percent. Means are 56 centimeters for annual precipitation, 7 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 50 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 36, T. 101/2 N., R. 14 E.

Oi--1 to 0 centimeters; undecomposed organic matter consisting principally of pine needles.

A--0 to 5 centimeters; very dark gray (10YR 3/2) gravelly sandy clay loam; black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; common very fine roots; 30 percent rock fragments; slightly acid; abrupt smooth boundary.

BA1--5 to 18 centimeters; very dark grayish brown (10YR 3/2) gravelly sandy clay loam; very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine pores; few fine and very fine roots; 20 percent rock fragments; slightly acid; clear smooth boundary.

BA2--18 to 41 centimeters; brown (10YR 4/3) gravelly sandy clay loam; dark yellowish brown (10YR 3/4) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine pores; few fine and medium roots; 20 percent rock fragments; slightly acid; clear wavy boundary.

Bt1--41 to 66 centimeters; reddish brown (5YR 4/3) gravelly sandy clay loam; dark reddish brown (5YR 3/3) moist; strong medium subangular blocky structure; hard, firm, sticky and slightly plastic; few very fine and fine pores; few fine and medium roots; common moderately thick clay films; 25 percent rock fragments; slightly acid; clear wavy boundary.

Bt2--66 to 81 centimeters; brown (7.5YR 5/4) very gravelly sandy clay; brown (7.5YR 4/4) moist; strong medium subangular blocky structure; hard, firm, slightly sticky and plastic; few very fine and fine pores; few fine, medium and coarse roots; few moderately thick clay films; 50 percent rock fragments; slightly acid; clear wavy boundary.

C--81 to 102 centimeters; reddish yellow (7.5YR 6/6) very stony sandy clay loam; strong brown (7.5YR 5/6) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine pores; few fine roots; 60 percent rock fragments; slightly acid.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 6.8. The A horizon has a hue of 7.5YR or 10YR, value of 2 through 4 dry, 2 through 4 moist and a chroma of 1 through 3. The texture of the fine earth fraction is loam or sandy loam. The soil has 15 to 30 percent rock fragments.

The BA horizon has a hue of 7.5YR or 10YR, value of 2 through 4 dry, 2 through 4 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy clay loam or loam. The soil has 15 to 30 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy clay loam or sandy clay. The argillic horizon has 15 to 35 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy clay loam or loam. The soil has 30 to 70 percent rock fragments.

Typic Eutroboralfs, LSC, 5, clayey-skeletal, mixed

Typic Eutroboralfs, LSC, 5, clayey-skeletal, mixed consists of deep, well drained soils that formed in alluvium and residuum from sandstone and shale. They are on rolling to very steep hills and mountains with slopes of 15 to 80 percent. Means are 56 centimeters for annual precipitation, 7 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 50 percent of the normal precipitation occurs during the period of 1 October to 31 March. A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 15, T. 10 N., R. 14 E.

Oi--5 to 0 centimeters; undecomposed organic matter consisting principally of pine needles

A--0 to 3 centimeters; dark grayish brown (10YR 4/2) loam; dark brown (7.5YR 3/2) moist; strong very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine pores; many very fine and fine roots; 10 percent rock fragments; slightly acid; clear wavy boundary.

AB--3 to 10 centimeters; brown (7.5YR 5/2) gravelly sandy clay loam; dark brown (7.5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine pores; many very fine and fine roots; 15 percent rock fragments; slightly acid; gradual wavy boundary.

E--10 to 28 centimeters; light reddish brown (5YR 6/3) gravelly clay loam; reddish brown (5YR 4/3) moist; moderate fine and medium subangular blocky structure; soft, very friable, very sticky and plastic; many very fine and fine pores; many medium, few very fine and fine roots; 25 percent rock fragments; slightly acid; gradual wavy boundary.

Bt1--28 to 43 centimeters; yellowish red (5YR 5/6) very gravelly clay; yellowish red (5YR 4/6) moist; strong medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common fine and very fine pores; few fine medium and coarse roots; many thin clay films; 50 percent rock fragments; slightly acid; clear wavy boundary.

Bt2--43 to 53 centimeters; yellowish red (5YR 5/6) very gravelly clay; yellowish red (5YR 4/6) moist; strong medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine pores; few medium roots; many moderately thick clay films; 50 percent rock fragments; slightly acid; clear wavy boundary.

Bt3--53 to 69 centimeters; yellowish red (5YR 5/6) very gravelly clay; yellowish red (5YR 4/6) moist; strong medium and coarse subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine pores; few medium roots; common moderately thick clay films; 45 percent rock fragments; slightly acid; gradual wavy boundary.

Bt4--69 to 100+ centimeters; light brown (7.5YR 6/4) gravelly clay; strong brown (7.5YR 5/6) moist; moderate medium and coarse subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine pores; few medium roots; common moderately thick clay films; 25 percent rock fragments; slightly acid.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 6.8.

The A horizon has a hue of 7.5YR or 10YR, value of 3 through 6 dry, 2 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy clay loam or loam. The soil has 5 to 30 percent rock fragments.

The AB horizon has a hue of 7.5YR or 10YR, value of 3 through 6 dry, 2 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy clay loam or loam. The soil has 15 to 35 percent rock fragments.

The E horizon has a hue of 5YR or 7.5YR, value of 4 through 8 dry, 2 through 6 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy clay loam or clay loam. The soil has 20 to 50 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 3 through 6 dry, 3 through 6 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay. The argillic horizon has 35 to 50 percent rock fragments.

Typic Eutroboralfs, LSC, 5, fine, mixed

Typic Eutroboralfs, LSC, 5, fine, mixed consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They occur on plains, hills and mountains on slopes of 0 to 80 percent. Means are 65 centimeters annual precipitation, 6 degrees Celsius annual air temperature and 2300 meters elevation. About 50 percent of the precipitation occurs in the cool season (1 October to 31 March).

A representative pedon of this soil is located in NW1/4SE1/4 of sec. 36, T.10 1/2 N., R. 15 E.

Oi--Decomposed organic matter, consisting of pine needles, twigs and leaves.

A--0 to 5 centimeters; brown (7.5YR 5/4) clay loam; dark brown (7.5YR 3/4) moist; moderate medium granular structure; loose, very friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; 10 percent rock fragments; neutral; clear smooth boundary.

Bt--5 to 38 centimeters; reddish brown (2.5YR 5/4) clay; reddish brown (2.5YR 4/4) moist; strong very fine and fine angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine pores; common very fine to medium roots; common moderately thick clay films; 10 percent rock fragments; neutral; gradual wavy boundary.

Btk1--38 to 61 centimeters; reddish brown (2.5YR 4/4) clay; dark reddish brown (2.5YR 3/4) moist; strong medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine pores; common very fine to coarse roots; many thick clay films; 10 percent rock fragments; mildly alkaline; gradual wavy boundary.

Btk2--61 to 94 centimeters; reddish brown (2.5YR 5/4) clay; reddish brown (2.5YR 4/4) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; weak very fine and fine pores; few fine to medium roots; many thick clay films; slight effervescence; 10 percent rock fragments; mildly alkaline; clear wavy boundary.

Btk3--94 to 102+ centimeters; light reddish brown (2.5YR 6/4) clay; reddish brown (2.5YR 4/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine pores; few very fine and fine roots; common thin clay films; slight effervescence; 10 percent rock fragments; moderately alkaline.

The solum thickness ranges from 50 to 100+ centimeters and the depth to bedrock is graeater than 50 centimeters. The reaction of the solum ranges from 6.6 to 8.2

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 20 percent rock fragments.

The Bt horizon has a hue of 2.5YR through 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay. The argillic horizon has 5 to 30 percent rock fragments.

Glossoboric Hapludalfs, LSM, 6, fine, mixed, mesic

Glossoboric Hapludalfs, LSM, 6, fine, mixed, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 72 centimeters for annual precipitation, 9 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NE1/4 of sec. 19, T. 11 N., R. 13 E.

Oi--5 to 0 centimeters; undecomposed organic matter consisting principally of needles, twigs and leaves

A--0 to 5 centimeters; yellowish red (5YR 5/6) cobbly loam; dark reddish brown (5YR 3/4) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine pores; few very fine roots; 20 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--5 to 13 centimeters; yellowish red (5YR 5/6) gravelly clay loam; reddish brown (5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine pores; common very fine and fine roots; common thin clay films; 25 percent rock fragments; neutral; clear smooth boundary.

Bt2--13 to 23 centimeters; reddish brown (5YR 5/4) gravelly clay loam; yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine pores; common fine, medium and coarse roots; common thin clay films; 15 percent rock fragments; neutral; gradual wavy boundary.

Bt3--23 to 43 centimeters; reddish brown (2.5YR 4/4) clay; dark red (2.5YR 3/6) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine pores; few fine and medium roots; many moderately thick clay films; 5 percent rock fragments; neutral; abrupt smooth boundary.

Bt4--43 to 100+ centimeters; reddish brown (2.5YR 4/4) clay; dark reddish brown (2.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine pores; few very fine and fine roots; many moderately thick clay films; 5 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.4 to 7.3.

The A horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or loam. The soil has 5 to 35 percent rock fragments.

The Bt horizon has a hue of 2.5YR or 5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 5 to 30 percent rock fragments.

Glossoboric Hapludalfs, LSM, 6, loamy-skeletal, mixed, mesic

Glossoboric Hapludalfs, LSM, 6, loamy-skeletal, mixed, mesic consists of deep, well drained soils that formed in residuum from sandstone, shale and limestone. They are on steep to very steep mountains with slopes of 40 to 80 percent. Means are 72 centimeters for annual precipitation, 9 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NW1/4 of sec. 28, T. 12 N., R. 11 E.

Oi--5 to 3 centimeters; undecomposed organic matter consisting principally of needles, twigs and leaves

Oe--3 to 0 centimeters; decomposed organic matter with humus veining

A--0 to 8 centimeters; dark brown (7.5YR 4/4) very gravelly loam; dark brown (7.5YR 3/4) moist; moderate medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine and fine roots; 40 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--8 to 18 centimeters; reddish brown (5YR 4/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine pores; few very fine and fine roots; common thin clay films; 60 percent rock fragments; neutral; clear wavy boundary.

Bt2--18 to 43 centimeters; yellowish red (5YR 4/6) very gravelly clay loam; yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and fine pores; few fine and medium roots; common moderately thick clay films; 50 percent rock fragments; neutral; clear wavy boundary.

Bt3--43 to 100+ centimeters; red (2.5YR 4/6) gravelly clay loam; dark red (2.5YR 3/6) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few very fine pores; few fine roots; common moderately thick clay films; 20 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 3 through 6 dry, 2 through 4 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay loam or loam. The soil has 10 to 50 percent rock fragments.

The Bt horizon has a hue of 2.5YR or 5YR, value of 3 through 6 dry, 2 through 4 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 35 to 60 percent rock fragments.

Aridic Haplustalfs, LSM, 3, fine-loamy, mixed, thermic

Aridic Haplustalfs, LSM, 3, fine-loamy, mixed, thermic consists of deep, well drained soils that formed in alluvium from mixed sources. They are on nearly level to rolling plains with slopes of 0 to 15 percent. Means are 40 centimeters for annual precipitation, 18 degrees Celsius for annual air temperature, and 1200 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NE1/4 of sec. 5, T. 8 N., R. 10 E.

A--0 to 3 centimeters; strong brown (7.5YR 5/6) gravelly sandy loam; strong brown (7.5YR 4/6) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine and fine roots; 15 percent rock fragments; neutral; abrupt smooth boundary.

BA--3 to 10 centimeters; brown (7.5YR 5/4) gravelly sandy loam; brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine pores; few very fine, fine and medium roots; 15 percent rock fragments; neutral; clear wavy boundary.

Bt1--10 to 33 centimeters; brown (7.5YR 5/4) gravelly loam; brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine pores; few very fine, fine, medium and coarse roots; few moderately thick clay films; 20 percent rock fragments; neutral; gradual wavy boundary.

Bt2--33 to 50 centimeters; brown (7.5YR 4/4) gravelly loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine, fine, medium and coarse roots; common moderately thick clay films; 30 percent rock fragments; neutral; gradual wavy boundary.

Bt3--50 to 101 centimeters; strong brown (7.5YR 4/6) extremely cobbly clay loam; dark brown (7.5YR 3/4) moist; fine medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine pores; few very fine, fine and medium roots; common moderately thick clay films; 75 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.4 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 5 to 30 percent rock fragments.

The BA horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 5 to 35 percent rock fragments.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is clay loam or loam. The argillic horizon has 15 to 35 percent rock fragments.

Aridic Haplustalfs, LSM, 3, clayey-skeletal, montmorillonitic, thermic

Aridic Haplustalfs, LSM, 3, clayey-skeletal, montmorillonitic, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from basalt. They are on nearly level to rolling plains, with slopes of 0 to 15 percent. Means are 44 centimeters for annual precipitation, 17 degrees Celsius for annual air temperature, and 1300 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March..

A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 6, T. 9 N., R. 6 E.

A--0 to 3 centimeters; reddish brown (5YR 4/3) very gravelly clay loam; dark reddish brown (5YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine pores; few very fine and fine roots; 40 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--3 to 5 centimeters; reddish brown (5YR 4/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; few thin clay films; 40 percent rock fragments; neutral; abrupt smooth boundary.

Bt2--5 to 25 centimeters; reddish brown (5YR 4/4) cobbly clay loam; dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 30 percent rock fragments; neutral; clear wavy boundary.

Bt3--25 to 71 centimeters; reddish brown (5YR 4/4) extremely strong clay; dark reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine and fine roots; many moderately thick clay films; 70 percent rock fragments; neutral.

R--71+ centimeters; vesicular basalt

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.4.

The A horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay loam or loam. The soil has 20 to 50 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 3 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 35 to 70 percent rock fragments.

The R horizon, where described, consists of basalt.

Aridic Haplustalfs, LSM, 3, loamy-skeletal, mixed, thermic

Aridic Haplustalfs, LSM, 3, loamy-skeletal, mixed, thermic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on rolling to very steep hills and mountains, with slopes of 15 to 80 percent. Means are 44 centimeters for annual precipitation, 17 degrees Celsius for annual air temperature, and 1300 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4NW1/4 of sec. 3, T. 6 N., R. 8 E.

A--0 to 5 centimeters; brown (10YR 4/3) gravelly loam; dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine pores; many very fine and fine roots; 25 percent rock fragments; neutral; abrupt smooth boundary.

B1t--5 to 23 centimeters; dark yellowish brown (10YR 4/4) very cobbly clay loam; dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; few moderately thick clay films; 35 percent rock fragments; neutral; clear smooth boundary.

B2t--23 to 56 centimeters; yellowish brown (10YR 5/4) very cobbly clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 25 percent rock fragments; neutral; clear wavy boundary.

B3t--56 to 86 centimeters; light yellowish brown (10YR 6/4) very cobbly loam; dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; few thin clay films; 40 percent rock fragments; neutral; gradual wavy boundary.

C--86 to 114 centimeters; light yellowish brown (10YR 6/4) very cobbly loam; yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine and fine roots; 45 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 20 to 50 percent rock fragments.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam or clay loam. The argillic horizon has 35 to 70 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 35 to 70 percent rock fragments.

Typic Haplustalfs, LSM, 4, -1, clayey-skeletal, mixed, thermic

Typic Haplustalfs, LSM, 4, -1, clayey-skeletal, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to steep plains, hills and mountains, with slopes of 0 to 40 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March..

A representative pedon of this soil is located in the SE1/4SW1/4 of sec. 14, T. 11 N., R. 6 E.

A--0 to 5 centimeters; reddish brown (5YR 4/3) clay loam; dark reddish brown (5YR 3/4) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine pores; few very fine and fine roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--5 to 18 centimeters; reddish brown (5YR 4/3) gravelly clay; dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine pores; common very fine and fine roots; common moderately thick clay films; 20 percent rock fragments; neutral; clear smooth boundary.

Bt2--18 to 30 centimeters; reddish brown (5YR 4/4) gravelly clay; reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine and fine roots; many moderately thick clay films; 20 percent rock fragments; neutral; clear wavy boundary.

Bt3--30 to 48 centimeters; reddish brown (5YR 5/4) very gravelly clay loam; reddish brown (5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 40 percent rock fragments; neutral; gradual wavy boundary.

BCt1--48 to 76 centimeters; reddish brown (5YR 5/4) very gravelly sandy clay loam; reddish brown (5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; common thin clay films; 50 percent rock fragments; neutral; gradual wavy boundary.

BCt2--76 to 152+ centimeters; light reddish brown (5YR 6/4) very gravelly sandy clay loam; reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; common thin clay films; 60 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.2.

The A horizon has a hue of 5YR or 7.5YR, value of 3 through 6 dry, 2 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 5 to 35 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 20 to 60 percent rock fragments.

The BC horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy clay loam or clay loam. The soil has 35 to 70 percent rock fragments.

Typic Haplustalfs, LSM, 4, -1, fine, mixed, thermic

Typic Haplustalfs, LSM, 4, -1, fine, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to steep plains, hills and mountains with slopes of 0 to 40 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NW1/4 of sec. 23, T. 9 N., R. 9 E.

Oi--3 to 0 centimeters; undecomposed organic matter consisting principally of leaves and twigs

A--0 to 3 centimeters; brown (7.5YR 4/2) gravelly loam; dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly hard, friable, nonsticky and slightly plastic; many very fine and fine pores; common very fine and fine roots; 20 percent rock fragments; neutral; clear smooth boundary.

BA--3 to 13 centimeters; brown (7.5YR 4/2) clay loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine pores; common fine, medium and coarse roots; 5 percent rock fragments; neutral; clear wavy boundary.

Bt1--13 to 30 centimeters; brown (7.5YR 4/4) clay loam; dark brown (7.5YR 3/4) moist; strong coarse subangular blocky structure; very hard, very firm, very sticky and plastic; few very fine and fine pores; few fine, medium and coarse roots; 5 percent rock fragments; neutral; gradual wavy boundary.

Bt2--30 to 66 centimeters; brown (7.5YR 4/4) clay loam; dark brown (7.5YR 3/4) moist; strong coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine pores; few fine medium and coarse roots; 5 percent rock fragments; neutral; abrupt wavy boundary.

Bt3--66 to 112 centimeters; brown (7.5YR 4/4) clay loam; dark brown (7.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine pores; few fine, medium and coarse roots; strong effervescence; common fine filaments or threads; common thin clay films; 5 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 60 centimeters. The reaction of the soil ranges from 6.8 to 7.6.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 5 to 35 percent rock fragments.

The BA horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay loam or loam. The soil has 5 to 30 percent rock fragments.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 5 to 30 percent rock fragments.

Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic

Typic Haplustalfs, LSM, 4, -1, fine-loamy, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to steep plains, hills and mountains, with slopes of 0 to 40 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 Octoberto 31 March.

A representative pedon of this soil is located in the SE1/4NE1/4 of sec. 2, T. 8 N., R. 9 E.

A--0 to 5 centimeters; yellowish brown (10YR 5/4) gravelly loam; dark yellowish brown (10YR 4/4) moist; weak thin platy structure; soft, friable, nonsticky and nonplastic; common very fine and fine pores; common very fine and fine roots; 15 percent rock fragments; neutral; abrupt smooth boundary.

BA--5 to 18 centimeters; yellowish brown (10YR 5/4) cobbly clay loam; dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine pores; few very fine and fine roots; 15 percent rock fragments; neutral; clear smooth boundary.

Bt1--18 to 38 centimeters; strong brown (7.5YR 4/6) clay loam; strong brown (7.5YR 4/6) moist; common medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; weak moderately thick clay films; 5 percent rock fragments; neutral; clear smooth boundary.

Bt2--38 to 56 centimeters; brown (7.5YR 5/4) clay loam; brown (7.5YR 4/4) moist; strong medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 5 percent rock fragments; neutral; clear smooth boundary.

Bt3--56 to 69 centimeters; light yellowish brown (10YR 6/4) gravelly clay loam; yellowish brown (10YR 5/4) moist; common medium and coarse subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 20 percent rock fragments; neutral; gradual wavy boundary.

BCt--69 to 100+ centimeters; light yellowish brown (10YR 6/4) gravelly clay loam; yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine and fine roots; few moderately thick clay films; 25 percent rock fragments; neutral.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 5 to 35 percent rock fragments.

The BA horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 35 percent rock fragments.

The Bt horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam. The argillic horizon has 0 to 30 percent rock fragments.

The BC horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam, loam or sandy clay loam. The soil has 10 to 40 percent rock fragments.

Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic

Typic Haplustalfs, LSM, 4, -1, loamy-skeletal, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4SE1/4 of sec. 33, T. 10 N., R. 10 E.

A--0 to 5 centimeters; brown (10YR 5/3) sandy loam; dark brown (7.5YR 3/4) moist; moderate medium and coarse granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; common very fine and fine roots; neutral; abrupt smooth boundary.

Bt1--5 to 15 centimeters; brown (7.5YR 4/4) cobbly clay loam; dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine pores; few fine and medium roots; common moderately thick clay films; 25 percent rock fragments; neutral; clear smooth boundary.

Bt2--15 to 30 centimeters; brown (7.5YR 4/4) gravelly clay loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few fine and medium roots; common thin clay films; 40 percent rock fragments; neutral; gradual wavy boundary.

Bt3--30 to 61 centimeters; brown (7.5YR 4/4) very gravelly sandy clay loam; dark brown (7.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few medium roots; common thin clay films; 50 percent rock fragments; neutral; abrupt wavy boundary.

R--61+ centimeters; decomposing diabase

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 0 to 30 percent rock fragments.

The Bt horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy clay loam or clay loam. The argillic horizon has 20 to 60 percent rock fragments.

Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic

Typic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to strongly sloping plains, with slopes of 0 to 15 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March..

A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 18, T. 8 N., R. 10 E.

A--0 to 5 centimeters; yellowish brown (10YR 5/4) gravelly loam; dark yellowish brown (10YR 4/4) moist; weak thin platy structure; soft, friable, slightly sticky and nonplastic; many fine and very fine pores; many very fine and fine roots; 20 percent rock fragments; normal; abrupt smooth boundary.

Bw--5 to 20 centimeters; dark yellowish brown (10YR 4/4) clay loam; dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and very fine pores; common very fine and fine roots; 5 percent rock fragments; normal; gradual wavy boundary.

Bt1--20 to 56 centimeters; dark yellowish brown (10YR 4/4) clay; dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine pores; few very fine and fine roots; common moderately thick clay films; 10 percent rock fragments; normal; gradual smooth boundary.

Bt2-56 to 81 centimeters; dark yellowish brown (10YR 4/4) cobbly clay; dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine pores; few very fine and fine roots; many moderately thick clay films; 15 percent rock fragments; normal; abrupt wavy boundary.

R--81+ centimeters; basalt bedrock

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 35 percent rock fragments.

The B horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 30 percent rock fragments.

The Bt horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay. The argillic horizon has 5 to 30 percent rock fragments.

Typic Haplustalfs, LSM, 4, clayey-skeletal, mixed, mesic

Typic Haplustalfs, LSM, 4, clayey-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 4, T. 11 N., R. 10 E.

A--0 to 5 centimeters; reddish brown (5YR 4/3) gravelly loam; dark reddish brown (5YR 3/3) moist; weak fine granular structure; soft, friable, slightly sticky and nonplastic; common very fine and fine pores; many very fine and fine roots; 20 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--5 to 20 centimeters; reddish brown (5YR 4/4) very cobbly loam; reddish brown (5YR 4/4) moist; common fine subangular blocky structure; slightly hard, friable, slightly sticky and slightlyplastic; common very fine and fine pores; common very fine to coarse roots; few thin clay films; 35 percent rock fragments; neutral; clear smooth boundary.

Bt2--20 to 41 centimeters; reddish brown (2.5YR 4/4) very gravelly clay; reddish brown (2.5YR 4/4) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; common very fine to coarse roots; common moderately thick clay films; 40 percent rock fragments; neutral; clear wavy boundary.

Bt3--41 to 56 centimeters; reddish brown (2.5YR 4/4) very gravelly clay; reddish brown (2.5YR 4/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine to medium roots; common moderately thick clay films; 35 percent rock fragments; neutral; clear wavy boundary.

Btk1--56 to 84 centimeters; reddish brown (2.5YR 4/4) very cobbly clay; reddish brown (2.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; slight effervescence; common moderately thick clay films; 40 percent rock fragments; mildly alkaline; clear wavy boundary.

Btk2--84 to 103+ centimeters; reddish brown (2.5YR 4/4) very cobbly clay; reddish brown (2.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; slight effervescence; common moderately thick clay films; 40 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.4.

The A horizon has a hue of 2.5YR through 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 10 to 35 percent rock fragments.

The Bt horizon has a hue of 2.5YR through 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay or clay loam. The argillic horizon has 35 to 70 percent rock fragments. Carbonates may or may not be present.

Typic Haplustalfs, LSM, 4, clayey-skeletal, montmorillonitic, mesic

Typic Haplustalfs, LSM, 4, clayey-skeletal, montmorillonitic, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximatley 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NW1/4 of sec. 27, T. 12 N., R. 7 E.

A--0 to 5 centimeters; brown (10YR 4/3) very cobbly loam; very dark grayish brown (10YR 3/2) moist; moderate medium and coarse granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; 35 percent rock fragments; neutral; clear smooth boundary.

Bt1--5 to 56 centimeters; brown (7.5YR 4/2) very cobbly clay; dark brown (7.5YR 3/4) moist; strong coarse angular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine pores; common very fine to medium roots; common moderately thick clay films; 40 percent rock fragments; neutral; gradual wavy boundary.

Bt2--56 to 102+ centimeters; brown (7.5YR 4/2) very cobbly clay; dark brown (7.5YR 3/4) moist; strong coarse angular blocky structure; very hard, very firm, very sticky and veryplastic; few very fine and fine pores; few medium to coarse roots; common moderately thick clay films; 40 percent rock fragments; neutral.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 20 to 60 percent rock fragments.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay or clay loam. The argillic horizon has 35 to 70 percent rock fragments.

Typic Haplustalfs, LSM, 4, fine-loamy, mixed, mesic)

Typic Haplustalfs, LSM, 4, fine-loamy, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NW1/4 of sec. 22, T. 11 N., R. 10 E.

Oi--3 to 0 centimeters; undecomposed organic matter consisting principally of leaves and twigs.

A--0 to 5 centimeters; dark brown (10YR 3/3) loam; very dark brown (10YR 2/2) moist; strong medium and coarse granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine pores; few fine and very fine roots; neutral; abrupt smooth boundary.

Bt1--5 to 41 centimeters; brown (7.5YR 4/2) clay loam; dark brown (7.5YR 3/4) moist; strong coarse angular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine pores; common fine and very fine roots; many moderately thick clay films; 5 percent rock fragments; neutral; clear wavy boundary.

Bt2--41 to 69 centimeters; brown (7.5YR 4/4) sandy clay loam; dark brown (7.5YR 3/4) moist; strong coarse subangular blocky structure; very hard, very firm, slightly sticky and slightly plastic; few very fine pores; few very fine roots; many moderately thick clay films; 10 percent rock fragments; neutral; clear smooth boundary.

C--69 to 152+ centimeters; strong brown (7.5YR 5/6) sandy loam; strong brown (7.5YR 4/6) moist; massive; hard, firm, nonsticky and nonplastic; common very fine pores; common very fine roots; 5 percent rock fragments; neutral.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.4.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 5 dry, 2 through 4 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam, sandy loam or sandy clay loam. The soil has 0 to 35 percent rock fragments.

The Bt horizon has a hue of 5YR through 10YR, value of 3 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or sandy clay loam. The argillic horizon has 0 to 30 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 3 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy loam, loam or sandy clay loam. The soil has 0 to 60 percent rock fragments.

Typic Haplustalfs, LSM, 4, fine, mixed, mesic

Typic Haplustalfs, LSM, 4, fine, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March..

A representative pedon of this soil is located in the NW1/4NW1/4 of sec. 21, T. 10 N., R. 8 E.

A--0 to 5 centimeters; brown (10YR 5/3) loam; brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine pores; few very fine and fine roots; neutral; clear smooth boundary.

Bt1--5 to 20 centimeters; brown (7.5YR 5/4) stony clay loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few fine to coarse roots; common thin clay films; 20 percent rock fragments; neutral; clear smooth boundary.

Bt2--20 to 41 centimeters; brown (7.5YR 4/4) stony clay loam; dark brown (7.5YR 3/4) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine pores; few very fine to coarse roots; common moderately thick clay films; 25 percent rock fragments; neutral; clear wavy boundary.

Bt3--41 to 89 centimeters; reddish brown (5YR 4/4) stony clay; dark reddish brown (5YR 3/4) moist; strong coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few fine pores; few very fine to coarse roots; slight effervescence; strong moderately thick clay films; 30 percent rock fragments; mildly alkaline; abrupt irregular boundary.

R--89+ centimeters; bedrock

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam, sandy loam, or clay loam. The soil has 0 to 30 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 5 to 35 percent rock fragments.

Typic Haplustalfs, LSM, 4, fine, montmorillonitic, mesic

Typic Haplustalfs, LSM, 4, fine, montmorillonitic, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SW1/4 of sec. 12, T. 9 N., R. 13 E.

A--0 to 5 centimeters; brown (7.5YR 4/2) gravelly loam; dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine pores; common very fine roots; 20 percent rock fragments; neutral; clear smooth boundary.

Bw--5 to 15 centimeters; brown (7.5YR 4/4) clay loam; brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine pores; few very fine to medium roots; 10 percent rock fragments; neutral; clear smooth boundary.

Bt1--15 to 30 centimeters; brown (7.5YR 4/4) gravelly clay; brown (7.5YR 4/2) moist; strong coarse angular blocky structure; very hard, very firm, very sticky and plastic; few very fine pores; few very fine to medium roots; pressure faces; common moderately thick clay films; 15 percent rock fragments; neutral; gradual smooth boundary.

Bt2--30 to 48 centimeters; brown (7.5YR 4/4) gravelly clay; brown (7.5YR 4/2) moist; moderate prismatic and strong coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine pores; few fine roots; pressure faces; many thick clay films; 25 percent rock fragments; moderately alkaline; clear smooth boundary.

Bt3--48 to 69 centimeters; brown (7.5YR 5/4YR) gravelly clay; brown (7.5YR 4/2) moist; moderate fine angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine pores; few fine roots; pressure faces; common moderately thick clay films; 20 percent rock fragments; moderately alkaline; clear smooth boundary.

BCt--69 to 86 centimeters; light brown (7.5YR 6/4) gravelly clay loam; brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine pores; few fine roots; common moderately thick clay films; 25 percent rock fragments; moderately alkaline; abrupt irregular boundary.

R--86+ centimeters; bedrock

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 35 percent rock fragments.

The Bw horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay loam or loam. The cambic horizon has 10 to 50 percent rock fragments.

The Bt horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay. The argillic horizon has 0 to 35 percent rock fragments.

The BC horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy clay loam, clay loam or clay. The soil has 10 to 60 percent rock fragments.

Typic Haplustalfs, LSM, 4, loamy-skeletal, mixed, mesic

Typic Haplustalfs, LSM, 4, loamy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4NE1/4 of sec. 23, T. 10 1/2 N., R. 12 E.

Oi--3 to 0 centimeters; undecomposed organic matter consisting principally of needles, twigs and leaves.

A--0 to 8 centimeters; yellowish brown (10YR 5/4) gravelly loam; dark yellowish brown (10YR 3/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine pores; common very fine and fine roots; 25 percent rock fragments; neutral; abrupt smooth boundary.

B--8 to 28 centimeters; brown (7.5YR 5/4) very gravelly sandy clay loam; dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine pores; common very fine to medium roots; 40 percent rock fragments; neutral; clear wavy boundary.

Bt1--28 to 51 centimeters; brown (7.5YR 5/4) very gravelly clay loam; dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine to coarse roots; common moderately thick clay films; 50 percent rock fragments; neutral; clear wavy boundary.

Bt2--51 to 76 centimeters; reddish brown (5YR 4/4) very cobbly clay loam; dark reddish brown (5YR 3/4) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine to coarse roots; common moderately thick clay films; 45 percent rock fragments; slightly acid; abrupt wavy boundary.

Bt3--76 to 102+ centimeters; reddish yellow (5YR 6/6) very gravelly clay; yellowish red (5YR 5/6) moist; strong fine and medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 45 percent rock fragments; slightly acid.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.1 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 5 to 35 percent rock fragments.

The B horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy clay loam or clay loam. The soil has 30 to 60 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay, clay loam or sandy clay loam. The argillic horizon has 35 to 60 percent rock fragments.

Udic Haplustalfs, LSM, 5, fine, mixed, mesic

Udic Haplustalfs, LSM, 5, fine, mixed, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains, with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SE1/4 of sec. 31, T. 10 N., R. 10E.

A1--0 to 10 centimeters; grayish brown (10YR 5/2) loam; very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine and fine roots; neutral; abrupt smooth boundary.

A2--10 to 20 centimeters; brown (7.5YR 5/2) loam; brown (7.5YR 4/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine pores; few fine and medium roots; 1 percent rock fragments; neutral; clear smooth boundary.

Bt1--20 to 71 centimeters; brown (7.5YR 5/4) clay; dark brown (7.5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few medium to coarse roots; many moderately thick clay films; 10 percent rock fragments; neutral; gradual wavy boundary.

Bt2--71 to 102+ centimeters; reddish brown (5YR 5/4) clay; reddish brown (5YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few medium and coarse roots; many moderately thick clay films; 10 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100centimeters. The reaction of the soil ranges from 6.4 to 7.3.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 0 to 30 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay or clay loam. The argillic horizon has 0 to 30 percent rock fragments.

Udic Haplustalfs, LSM, 5, fine, montmorillonitic, mesic

Udic Haplustalfs, LSM, 5, fine, montmorillonitic, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NE1/4 of sec. 30, T. 12 N., R. 8 E.

A--0 to 8 centimeters; very dark grayish brown (10YR 3/2) gravelly loam; very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and nonplastic; many very fine and fine pores; many very fine and fine roots; 25 percent rock fragments; neutral; abrupt smooth boundary.

Bt1--8 to 20 centimeters; brown (7.5YR 4/4) gravelly clay loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; common very fine and fine roots; common moderately thick clay films; 15 percent rock fragments; neutral; clear smooth boundary.

Bt2--20 to 61 centimeters; brown (7.5YR 4/4) clay; dark brown (7.5YR 3/4) moist; strong coarse subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine pores; common very fine to coarse roots; common moderately thick clay films; 5 percent rock fragments; neutral; clear smooth boundary.

Bt3--61 to 79 centimeters; strong brown (7.5YR 4/6) gravelly clay loam; dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; few very fine to medium roots; few moderately thick clay films; 15 percent rock fragments; neutral; clear smooth boundary.

C--79 to 102+ centimeters; strong brown (7.5YR 5/6) very gravelly loam; strong brown (7.5YR 4/6) moist; massive; slightly hard, firm, slightly sticky and nonplastic; common very fine and fine pores; few very fine and fine roots; 25 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 7.5YR or 10YR, value of 3 through 6 dry, 2 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam, clay loam or sandy loam. The soil has 0 to 35 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or clay. The argillic horizon has 0 to 30 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam, sandy clay loam or clay loam. The soil has 10 to 50 percent rock fragments.

Udic Haplustalfs, LSM, 5, clayey-skeletal, mixed, mesic

Udic Haplustalfs, LSM, 5, clayey-skeletal, mixed, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4NE1/4 of sec. 35, T. 12 N., R. 10 E.

Oi--3 to 0 centimeters; undecomposed oak and pine litter

A--0 to 8 centimeters; reddish brown (5YR 4/3) gravelly loam; dark reddish brown (5YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; common very fine to medium roots; 15 percent rock fragments; neutral; abrupt wavy boundary.

AE--8 to 33 centimeters; reddish brown (5YR 5/4) gravelly loam; dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium pores; common fine to coarse roots; 25 percent rock fragments; neutral; clear wavy boundary.

Bt1--33 to 58 centimeters; reddish brown (5YR 4/3) very gravelly clay loam; dark reddish brown (5YR 3/3) moist; strong medium to coarse angular blocky structure; hard, firm, sticky and plastic; common very fine to medium pores; few very fine to medium roots; many moderately thick clay films; 35 percent rock fragments; neutral; gradual wavy boundary.

Bt2--58 to 79 centimeters; reddish brown (5YR 4/4) very cobbly clay; dark reddish brown (5YR 3/4) moist; strong coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine pores; few very fine and fine roots; many moderately thick clay films; 40 percent rock fragments; neutral; clear smooth boundary.

Bt3--79 to 107+ centimeters; reddish brown (5YR 4/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine pores; few very fine roots; common moderately thick clay films; 60 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 5 to 35 percent rock fragments.

The B horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 40 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay or clay loam. The argillic horizon has 35 to 60 percent rock fragments.

Udic Haplustalfs, LSM, 5, fine-loamy, mixed, mesic

Udic Haplustalfs, LSM, 5, fine-loamy, mixed, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SE1/4 of sec. 30, T. 12 N., R. 11E.

Oi--5 to 0 centimeters; undecomposed oak and pine litter

A--0 to 3 centimeters; reddish brown (5YR 4/4) gravelly loam; dark reddish brown (5YR 3/4) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine roots; slight effervescence; 20 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Bt1--3 to 23 centimeters; reddish brown (5YR 4/3) clay loam; dark reddish brown (5YR 3/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few fine and medium roots; strong effervescence; common moderately thick clay films; 10 percent rock fragments; mildly alkaline; clear smooth boundary.

Bt2--23 to 61 centimeters; reddish brown (5YR 4/3) clay loam; dark reddish brown (5YR 3/3) moist; strong medium and coarse angular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few fine and medium roots; strong effervescence; many moderately thick clay films; 5 percent rock fragments; mildly alkaline; clear wavy boundary.

Bt3--61 to 102+ centimeters; reddish brown (5YR 4/3) clay; dark reddish brown (5YR 3/3) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few fine roots; slight effervescence; many moderately thick clay films; 5 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 100centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The A horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 35 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is clay loam, sandy clay loam or clay. The argillic horizon has 5 to 35 percent rock fragments.

Udic Haplustalfs, LSM, 5, loamy-skeletal, mixed, mesic

Udic Haplustalfs, LSM, 5, loamy-skeletal, mixed, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NW1/4 of sec. 32, T. 8 N., R. 9 E.

Oi--3 to 0 centimeters; undecomposed oak and pine litter

A--0 to 3 centimeters; grayish brown (10YR 5/2) loam; very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine and fine roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

B--3 to 18 centimeters; brown (10YR 5/3) gravelly loam; dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine pores; common very fine and fine roots; 15 percent rock fragments; neutral; clear wavy boundary.

Bt1--18 to 51 centimeters; light brownish gray (10YR 6/2) very cobbly clay loam; dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine pores; few very fine to coarse roots; few moderately thick clay films; 45 percent rock fragments; neutral; clear wavy boundary.

Bt2--51 to 79 centimeters; light brownish gray (10YR 6/2) very cobbly clay loam; dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; common very fine and fine roots; few moderately thick clay films; 60 percent rock fragments; neutral; clear smooth boundary.

BCt--79 to 112 centimeters; grayish brown (10YR 5/2) very strong clay loam; dark, grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; common very fine and fine roots; few moderately thick clay films; 55 percent rock fragments; neutral; abrupt smooth boundary.

R--112+ centimeters; schist bedrock

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 0 to 35 percent rock fragments.

The B horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or clay loam. The soil has 10 to 50 percent rock fragments.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 4 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay loam or sandy clay loam. The argillic horizon has 35 to 60 percent rock fragments.

Vertic Haplustalfs, LSM, 4, fine, montmorillonitic, mesic

Vertic Haplustalfs, LSM, 4, fine, montmorillonitic, mesic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means are 56 centimeters for annual precipitation, 14 degrees Celsius for annual air temperature, and 1600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4SW1/4 of sec. 10, T. 9 N., R. 8E.

AB--0 to 3 centimeters; brown (10YR 4/3) gravelly clay loam; dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; many very fine pores; common very fine roots; 2 centimeter surface cracks; 25 percent rock fragments; neutral; clear smooth boundary.

Bt1--3 to 23 centimeters; dark brown (10YR 3/3) very gravelly clay; dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; hard, firm, very sticky and plastic; many very fine pores; few fine roots; 2 centimeter cracks; weak thin clay films; 35 percent rock fragments; neutral; clear smooth boundary.

Bt2--23 to 41 centimeters; reddish yellow (7.5YR 6/6) clay; strong brown (7.5YR 5/6) moist; strong coarse angular blocky and medium prismatic structure; extremely hard, extremely firm, very sticky and very plastic; few fine pores; few fine roots; compression faces and cracks; many moderately thick clay films; 10 percent rock fragments; neutral; gradual wavy boundary.

Btk--41 to 71 centimeters; reddish yellow (7.5YR 6/6) clay; strong brown (7.5YR 5/6) moist; strong coarse angular blocky and medium prismatic structure; extremely hard, extremely firm, very sticky and very plastic; few fine pores; strong effervescence; common fine segregated lime filaments; many moderately thick clay films; moderately alkaline; gradual wavy boundary.

Bctk--71 to 104 centimeters; reddish yellow (7.5YR 7/6) clay; reddish yellow (7.5YR 6/6) moist; massive; hard, firm, sticky and very plastic; few fine pores; strong effervescence; common fine segregated lime filaments; many moderately thick clay films; moderately alkaline.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 8.2.

The AB horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay loam or clay. The soil has 0 to 35 percent rock fragments. Deep, wide cracks occur within 2 centimeters of the surface.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay. The argillic horizon has 0 to 35 percent rock fragments.

Vertic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic

Vertic Haplustalfs, LSM, 4, -1, fine, montmorillonitic, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NE1/4 of sec. 2, T. 6 N., R. 8 E.

AB--0 to 5 centimeters; dark grayish brown (10YR 4/2) clay loam; brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine pores; common very fine and fine roots; 3 centimeter cracks; 5 percent rock fragments; neutral; abrupt wavy boundary.

Bt--5 to 23 centimeters; dark grayish brown (10YR 4/2) clay; brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine and fine roots; 3 centimeter cracks; common moderately thick clay films; 5 percent rock fragments; neutral; clear smooth boundary.

Btk1--23 to 76 centimeters; brown (10YR 4/3) clay; dark brown (10YR 3/3) moist; strong coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine and fine pores; few very fine to coarse roots; strong effervescence; many moderately thick clay films; 5 percent rock fragments; mildly alkaline; clear wavy boundary.

Btk2--76 to 104+ centimeters; brown (10YR 4/3) clay; dark brown (10YR 3/3) moist; strong coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine to medium roots; strong effervescence; few fine irregular soft masses; many moderately thick clay films; 5 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The AB horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay loam or clay. The soil has 0 to 20 percent rock fragments. Deep wide cracks occur within 2 centimeters of the surface.

The Bt horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is clay. The argillic horizon has 0 to 70 percent rock fragments.

Ustalfic Haplargids, LSM, 2, fine, mixed, thermic

Ustalfic Haplargids, LSM, 2, fine, mixed, thermic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means are 28 centimeters for annual precipitation, 21 degrees Celsius for annual air temperature, and 600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NW1/4 of sec. 24, T. 8 N., R. 6 E.

A--0 to 1 centimeters; strong brown (7.5YR 5/6) gravelly loam; strong brown (7.5YR 4/6) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; many very fine and fine roots; 15 percent rock fragments; neutral; abrupt smooth boundary.

Bw--1 to 10 centimeters; yellowish red (5YR 5/6) gravelly loam; yellowish red (5YR 4/6) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderate very fine and fine pores; many very fine and fine roots; 15 percent rock fragments; neutral; clear wavy boundary.

Bt1--10 to 20 centimeters; yellowish red (5YR 4/6) very cobbly clay loam; yellowish red (5YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; moderate very fine and fine pores; few very fine and fine roots; common moderately thick clay films; 35 percent rock fragments; neutral; gradual wavy boundary.

Bt2--20 to 41 centimeters; yellowish red (5YR 4/6) gravelly clay; yellowish red (5YR 4/6) moist; strong medium and coarse subangular blocky structure; very hard, very firm, sticky and plastic; few very fine pores; few very fine and fine roots; many moderately thick clay films; 15 percent rock fragments; neutral; gradual wavy boundary.

Bt3--41 to 61 centimeters; yellowish red (5YR 4/6) cobbly clay; yellowish red (5YR 4/6) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine pores; few very fine roots; many moderately thick clay films; 30 percent rock fragments; neutral; gradual wavy boundary.

Bt4--61 to 102+ centimeters; yellowish red (5YR 4/6) cobbly clay; yellowish red (5YR 4/6) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, sticky and plastic; few very fine pores; few very fine roots; common moderately thick clay films; 30 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The A horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 35 percent rock fragments.

The Bw horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 10 to 35 percent rock fragments.

The Bt horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay or clay loam. The argillic horizon has 5 to 35 percent rock fragments.

Ustochreptic Calciorthids, LSM, 2, coarse-loamy, mixed, thermic

Ustochreptic Calciorthids, LSM, 2, coarse-loamy, mixed, thermic consists of deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to rolling plains with slopes of 0 to 15 percent. Means are 32 centimeters for annual precipitation, 20 degrees Celsius for annual air temperature, and 800 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SW1/4 of sec. 3, T. 6N., R. 10 E.

Ak--0 to 5 centimeters; brown (7.5YR 5/4) sandy loam; brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; many very fine and fine roots; strong effervescence; disseminated lime; 10 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Bwk1--5 to 48 centimeters; brown (7.5YR 5/4) loam; strong brown (7.5YR 4/6) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine pores; common very fine and fine roots; strong effervescence; disseminated lime; 10 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Bwk2--48 to 61 centimeters; brown (7.5YR 5/4) sandy loam; brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; common very fine and fine roots; strong effervescence; disseminated lime; 5 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Ck1--61 to 69 centimeters; brown (7.5YR 5/4) very gravelly loamy sand; brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine to medium pores; few very fine and fine roots; violent effervescence; disseminated lime; 45 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Ck2--69 to 112 centimeters; brown (7.5YR 5/4) gravelly loamy sand; dark brown (7.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine to medium pores; few very fine to coarse roots; violent effervescence; disseminated lime; 15 percent rock fragments; mildly alkaline; abrupt smooth boundary.

2Ck--112 to 152 centimeters; brown (7.5YR 5/4) gravelly sandy loam; brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine to medium pores; few very fine and fine roots; strong effervescence; disseminated lime; 20 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 7.4 to 8.4.

The Ak horizon has a hue of 7.5YR or 10YR, value of 3 through 7 dry, 3 through 6 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 5 to 30 percent rock fragments.

The Bwk horizon has a hue of 7.5YR or 10YR, value of 3 through 7 dry, 3 through 6 moist and a chroma of 3 through 6. The texture of the fine earth fraction is loam or sandy loam. The cambic horizon has 5 to 35 percent rock fragments.

The Ck horizon has a hue of 7.5YR or 10YR, value of 3 through 7 dry, 3 through 6 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy loam or loamy sand. The soil has 5 to 50 percent rock fragments.

Lithic Camborthids, LSM, 2, loamy-skeletal, mixed, thermic

Lithic Camborthids, LSM, 2, loamy-skeletal, mixed, thermic consists of shallow, well drained soils that formed in residuum from granite and tuff. They are on nearly level to steep plains and hills with slopes of 0 to 40 percent. Means are 28 centimeters for annual precipitation, 21 degrees Celsius for annual air temperature, and 600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NW1/4 of sec. 34, T. 9 N., R. 6 E.

A--0 to 5 centimeters; brown (10YR 5/3) very gravelly sandy loam; very dark grayish brown (10YR 3/2) moist; single grain structure; loose, loose, nonsticky and nonplastic; many very fine and fine pores; many very fine and fine roots; 60 percent rock fragments; neutral; abrupt wavy boundary.

BW--5 to 28 centimeters; dark yellowish brown (10YR 4/4) gravelly loam; dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine pores; many very fine and fine roots; 20 percent rock fragments; neutral; abrupt wavy boundary.

C--28 to 38 centimeters; light gray (10YR 6/1) extremely gravelly loamy sand; very dark gray (10YR 3/1) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine pores; 80 percent rock fragments; neutral; abrupt wavy boundary.

R--38+ centimeters; bedrock.

The soil depth to bedrock is less than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 30 to 70 percent rock fragments.

The Bw horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or sandy loam. The cambic horizon has 35 to 70 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 1 through 6. The texture of the fine earth fraction is loamy sand or sandy loam. The soil has 35 to 70 percent rock fragments.

Ustochreptic Camborthids, LSM, 2, loamy-skeletal, mixed, thermic

Ustochreptic Camborthids, LSM, 2, loamy-skeletal, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on rolling to very steep hills with slopes of 15 to 80 percent. Means are 28 centimeters for annual precipitation, 21 degrees Celsius for annual air temperature, and 600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE\SW\ of sec. 5, T. 2 N., R. 11 E.

A--0 to 3 centimeters; brown (10YR 4/3) extremely gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; common very fine roots; 80 percent rock fragments; neutral; abrupt wavy boundary.

Bw1--3 to 18 centimeters; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; common very fine to medium roots; 80 percent rock fragments; neutral; gradual wavy boundary.

Bw2--18 to 38 centimeters; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam; dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine to medium roots; 50 percent rock fragments; neutral; gradual diffuse boundary.

Bw3--38 to 97 centimeters; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam; dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine and fine roots; 50 percent rock fragments; neutral; abrupt wavy boundary.

R--97+ centimeters; granite bedrock.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.6 to 7.6.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 35 to 90 percent rock fragments.

The Bw horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 3 through 6. The texture of the fine earth fraction is sandy clay loam or sandy loam. The cambic horizon has 35 to 90 percent rock fragments.

Typic Torrifluvents, LSM, 2

Typic Torrifluvents consist of deep to poorly drained soils that formed in recent alluvium. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means range from 22 to 32 centimeters for precipitation, 20 to 22 degrees Celsius for annual air temperature and 500 to 800 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is not included due to variability at this categorical level.

The depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.0 to 7.6.

These soils have A and C horizons.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 7 dry, 2 through 6 moist, and chroma of 3 through 5. The texture of the fine earth fraction ranges from loamy sand to loam. The rock fragment content ranges from 5 to 40 percent.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist, and chroma of 1 through 6. The texture of the fine earth fracion ranges from loamy sand to loam. The rock fragment content ranges from 5 to 50 percent.

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Typic Ustifluvents, LSM, 3-4

Typic Ustifluvents consist of well to poorly drained soils that formed in recent alluvium. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means range from 34 to 56 centimeters for precipitation, 13 to 18 degrees Celsius for annual air temperature and 1000 to 1600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is not included due to variability at this categorical level.

The depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.0 to 7.6.

These soils have A and C horizons.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 7 dry, 2 through 6 moist, and chroma of 2 through 4. The texture of the fine earth fraction ranges from loamy sand to loam. The rock fragment content ranges from 0 to 40 percent.

The C horizon has a hue of 10YR or 7.5YR, value of 3 through 7 dry, 2 through 6 moist, and chroma of 1 through 4. The texture of the fine earth fraction ranges from loamy sand to sandy loam. The rock fragment content ranges from 5 to 50 percent.

Torriorthents, LSM, 2

Torriorthents consist of shallow to deep well drained soils that formed in alluvium and residuum from mixed sources. They are on steep to very steep mountains and scarps, with slopes of 40 to 120 percent. Means range from 22 to 32 centimeters for precipitation, 20 to 22 degrees Celsius for annual air temperature and 500 to 800 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is not included due to variability at this categorical level.

The depth to bedrock ranges from less than 50 to over 100 centimeters. The reaction of the soil ranges from 6.0 to 7.6.

These soils have A and C horizons. They may or may not have R horizons.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 7 dry, 2 through 6 moist, and chroma of 3 through 5. The texture of the fine earth fraction ranges from loamy sand to loam. The rock fragment content ranges from 5 to 60 percent.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist, and chroma of 3 through 6. The texture of the fine earth fracion ranges from loamy sand to sandy loam. The rock fragment content ranges from 5 to 60 percent.

Typic Udorthents, LSC, 6, sandy-skeletal, mixed, frigid

Typic Udorthents, LSC, 6, sandy-skeletal, mixed, frigid consists of deep, well drained soils that formed in residuum from sandstone. They are on very steep scarps and mountains with slopes of 40 to 120 percent. Means are 72 centimeters for annual precipitation, 8 degrees Celsius for annual air temperature, and 2300 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period 1 April to 31 September.

A representative pedon of this soil is located in the SW1/4SE1/4 of sec. 23, T. 12 N., R. 8 E.

Oi--5 to 0 centimeters; undecomposed needles, leaves and twigs.

A--0 to 8 centimeters; light yellowish brown (10YR 6/4) very stony sandy loam; brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine pores; common fine and medium roots; 45 percent rock fragments; neutral; abrupt wavy boundary.

C1--8 to 33 centimeters; light yellowish brown (10YR 6/4) very cobbly sandy loam; dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine pores; common very fine to medium roots; 55 percent rock fragments; neutral; clear wavy boundary.

C2--33 to 66 centimeters; very pale brown (10YR 7/4) very stony loamy sand; dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine pores; many very fine to coarse roots; 55 percent rock fragments; neutral; gradual wavy boundary.

C3--66 to 102 centimeters; light yellowish brown (10YR 6/4) very strong loamy sand; dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine pores; many very fine to coarse roots; 70 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loamy sand, sandy loam or loam. The soil has 20 to 60 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy loam or loamy sand. The soil has 35 to 70 percent rock fragments.

Typic Udorthents, LSM, 6, sandy-skeletal, mixed, mesic

Typic Udorthents, LSM, 6, sandy-skeletal, mixed, mesic consists of deep, well drained soils that formed in residuum from sandstone. They are on very steep scarps and mountains with slopes of 40 to 120 percent. Means are 72 centimeters for annual precipitation, 9 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SE1/4 of sec. 36, T. 12 N., R. 11 E.

Oi--8 to 0 centimeters; undecomposed needles, leaves and twigs.

A--0 to 8 centimeters; light gray (10YR 7/2) loamy sand; yellowish brown (10YR 5/4) moist; simple grain structure; loose, loose, nonsticky and nonplastic; many very fine pores; many very fine and fine roots; neutral; clear smooth boundary.

C1--8 to 18 centimeters; light gray (10YR 7/2) very gravelly loamy sand; yellowish brown (10YR 5/4) moist; single grain structure; loose, loose, nonsticky and nonplastic; many very fine pores; common very fine to medium roots; 45 percent rock fragments; neutral; gradual wavy boundary.

C2--18 to 102 centimeters; very pale brown (10YR 7/4) very gravelly loamy sand; yellowish brown (10YR 5/4) moist; single grain structure; loose, loose, nonsticky and nonplastic; many very fine pores; common very fine to coarse roots; 60 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy loam, loamy sand or loam. The soil has 0 to 60 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loamy sand or sand. The soil has 35 to 70 percent rock fragments.

Typic Ustorthents, LSM, 5, sandy-skeletal, mixed, mesic

Typic Ustorthents, LSM, 5, sandy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in residuum from sandstone. They are on very steep scarps and mountains with slopes of 40 to 120 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NW1/4 of sec. 26, T. 10 N., R. 13 E.

Oi--13 to 0 centimeters; undecomposed needles, leaves and twigs.

A--0 to 41 centimeters; brown (7.5YR 5/4) very stony sandy loam; dark brown (7.5YR 3/4) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine to coarse roots; 55 percent rock fragments.

C1--41 to 66 centimeters; light brown (7.5YR 6/4) very cobbly loamy sand; dark brown (7.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine to coarse roots; 65 percent rock fragments.

C2--66 to 86 centimeters; light brown (7.5YR 6/4) very cobbly loamy sand; dark brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine to coarse roots; 65 percent rock fragments.

R--86+ centimeters; sandstone bedrock.

The soil depth to bedrock is greater than 70 centimeters. The reaction of the soil ranges from 6.2 to 7.3.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam, sandy loam or loamy sand. The soil has 5 to 60 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 4 through 7 dry, 3 through 6 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loamy sand or sand. The soil has 35 to 70 percent rock fragments.

Typic Eutrochrepts, LSC, 6, loamy-skeletal, mixed, frigid

Typic Eutrochrepts, LSC, 6, loamy-skeletal, mixed, frigid consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They occur on plains, hills and mountains on slopes of 0 to 80 percent. Means are 72 centimeters annual precipitation, 5 degrees Celsius annual air temperature and 2400 meters elevation. About 50 percent of the precipitation occurs in the cool season (1 October to 31 March).

A representative pedon of this soil is located in SW1/4SW1/4 of sec. 36, T.10 1/2 N., R. 14 E.

O1--5 to 3 centimeters; decomposing organic matter, consisting of pine needles, twigs and leaves.

O2--3 to 0 centimeters; decomposed organic matter.

A--0 to 8 centimeters; reddish brown (5YR 4/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common fine pores; few very fine to medium roots; 35 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Bw1--8 to 38 centimeters; reddish brown (5YR 5/4) very cobbly clay loam; dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine pores; few very fine to medium roots; slight effervescence; 30 percent rock fragments; moderately alkaline; abrupt wavy boundary.

Bw2--38 to 76 centimeters; reddish brown (5YR 5/4) very gravelly clay loam; dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine pores; few very fine to coarse roots; strong effervescence; 40 percent rock fragments; moderately alkaline; gradual wavy boundary.

Ck--76 to 100 centimeters; light reddish brown (5YR 6/4) very gravelly clay loam; reddish brown (5YR 5/4) moist; massive structure; hard, friable, slightly sticky and slightly plastic; common fine pores; few very fine to coarse roots; violent effervescence; 40 percent rock fragments; moderately alkaline.

The solum thickness ranges from 50 to 100+ centimeters and the depth to bedrock is graeater than 50 centimeters. The reaction of the solum ranges from 7.2 to 8.2

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or clay loam. The soil has 5 to 20 percent rock fragments.

The B horizon has a hue of 5YR through 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or loam. The cambic horizon has 30 to 50 percent rock fragments.

The C horizon has a hue of 5YR through 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is clay loam or loam. The soil has 35 to 70 percent rock fragments.

Typic Eutrochrepts, LSM, 6, loamy-skeletal, mixed, mesic

Typic Eutrochrepts, LSM, 6, loamy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on rolling to very steep hills, mountains and scarps with slopes of 15 to 120 percent. Means are 72 centimeters for annual precipitation, 9 degrees Celsius for annual air temperature, and 2200 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SE1/4 of sec. 34, T. 11 N., R. 12 E.

Oi--3 to 0 centimeters; undecomposed needles, leaves and twigs.

A--0 to 5 centimeters; brown (10YR 5/3) very gravelly loam; dark brown (7.5YR 3/2) moist; moderate very fine and fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine pores; common very fine to medium roots; 35 percent rock fragments; slightly acid; clear smooth boundary.

Bw1--5 to 20 centimeters; brown (10YR 5/3) cobbly clay loam; dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, firm, sticky and slightly plastic; common very fine and fine pores; common very fine to coarse roots; 30 percent rock fragments; medium acid; gradual smooth boundary.

Bw2--20 to 58 centimeters; light brown (7.5YR 6/4) very stony clay loam; dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and slightly plastic; common very fine and fine pores; common very fine to coarse roots; 65 percent rock fragments; medium acid; gradual wavy boundary.

C--58 to 102 centimeters; light brown (10YR 6/4) extremely stony clay loam; brown (7.5YR 4/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine pores; common fine and medium roots; 85 percent rock fragments; medium acid.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.0 to 7.3.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a croma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 15 to 60 percent rock fragments.

The B horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 35 to 75 percent rock fragments.

The C horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam, sandy loam or clay loam. The soil has 35 to 85 percent rock fragments.

Fluventic Ustochrepts, LSM, 3-5

Fluventic Ustochrepts consist of deep well to poorly drained soils that formed in recent alluvium. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means range from 36 to 68 centimeters for precipitation, 10 to 19 degrees Celsius for annual air temperature and 1000 to 2100 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is not included due to variability at this categorical level.

The depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.0 to 7.6.

These soils have A and B horizons. They may or may not have E or C horizons.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 7 dry, 2 through 6 moist, and chroma of 3 through 5. The texture of the fine earth fraction ranges from sandy loam to clay loam. The rock fragment content ranges from 0 to 50 percent.

The B horizon has a hue of 10YR or 7.5YR, value of 3 through 5 dry, 2 through 4 moist, and chroma of 2 through 4. The texture of the fine earth fracion ranges from loam to clay loam. The rock fragment content ranges from 0 to 60 percent.

Lithic Ustochrepts, LSM, 3, loamy-skeletal, mixed, thermic

Lithic Ustochrepts, LSM, 3, loamy-skeletal, mixed, thermic consists of shallow, well drained soils that formed in residuum from mixed sources. They are on rolling to steep hills with slopes of 15 to 40 percent. Means are 44 centimeters for annual precipitation, 17 degrees Celsius for annual air temperature, and 1300 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4SE1/4 of sec. 28, T. 9 1/2 N., R. 5 E.

A--0 to 5 centimeters; brown (10YR 4/3) extremely gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; many very fine and fine pores; many very fine and fine roots; 90 percent rock fragments; neutral; abrupt wavy boundary.

Bw--5 to 41 centimeters; dark yellowish brown (10YR 4/4) very cobbly loam; dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; many very fine and fine pores; common very fine to medium roots; 70 percent rock fragments; neutral; abrupt smooth boundary.

C--41 to 48 centimeters; light yellowish brown (10YR 6/4) extremely gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; massive; soft, friable, nonsticky and nonplastic; many fine and medium pores; 85 percent rock fragments; neutral; abrupt smooth boundary.

R--48+ centimeters; Gila conglomerate.

The soil depth to bedrock is less than 50 centimeters. The reaction of the soil ranges from 6.4 to 7.4

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 30 to 90 percent rock fragments.

The B horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam, sandy loam or sandy clay loam. The cambic horizon has 35 to 90 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy loam or loamy sand. The soil has 35 to 90 percent rock fragments.

Lithic Ustochrepts, LSM, 4, loamy-skeletal, mixed mesic

Lithic Ustochrepts, LSM, 4, loamy-skeletal, mixed mesic consists of shallow, well drained soils that formed in residuum from mixed sources. They are on rolling to very steep hills and mountains with slopes of 15 to 80 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NW1/4 of sec. 25, T. 10 N., R. 6 E.

A--0 to 5 centimeters; brown (7.5YR 5/4) very gravelly sandy loam; dark brown (7.5YR 3/4) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; many fine pores; common very fine and fine roots; 40 percent rock fragments; neutral; abrupt smooth boundary.

Bw1--5 to 25 centimeters; brown (7.5YR 5/4) very gravelly loam; dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine to medium roots; 45 percent rock fragments; neutral; clear wavy boundary.

Bw2--25 to 48 centimeters; reddish brown (5YR 5/4) very gravelly loam; dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine to medium roots; 55 percent rock fragments; neutral; abrupt irregular boundary.

R--48+ centimeters; gneiss.

The soil depth to bedrock is less than 50 centimeters. The reaction of the soil ranges from 6.4 to 7.4.

The A horizon has a hue of 7.5YR or 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The B horizon has a hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy clay loam. The cambic horizon has 35 to 70 percent rock fragments.

Typic Ustochrepts, LSM, 4, loamy-skeletal, mixed, mesic

Typic Ustochrepts, LSM, 4, loamy-skeletal, mixed, mesic consists of moderately deep and deep soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 56 centimeters for annual precipitation, 14 degrees Celsius for annual air temperature, and 1600 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NW1/4 of sec. 35, T. 11 N., R. 11 E.

A--0 to 5 centimeters; brown (10YR 5/3) gravelly loamy sand; dark yellow brown (10YR 3/4) moist; single grain structure; loose, loose, nonsticky and nonplastic; many very fine pores; few very fine and fine roots; 30 percent rock fragments; neutral; abrupt wavy boundary.

Bw1--5 to 38 centimeters; yellowish brown (10YR 5/4) very gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine to coarse roots; 40 percent rock fragments; neutral; clear wavy boundary.

Bw2--38 to 84 centimeters; yellowish brown (10YR 5/4) very gravelly sandy loam; dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine to medium pores; few very fine to coarse roots; 40 percent rock fragments; neutral; clear wavy boundary.

C--84 to 102+ centimeters; light yellowish brown (10YR 6/4) very gravelly sandy loam; dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine pores; few fine roots; 55 percent rock fragments; neutral.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.4 to 7.4.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam, sandy loam or loamy sand. The soil has 5 to 50 percent rock fragments.

The B horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy loam, sandy clay loam or loam. The cambic horizon has 35 to 60 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is sandy loam or loamy sand. The soil has 35 to 70 percent rock fragments.

Typic Ustochrepts, LSM, 4, -1, loamy-skeletal, mixed, thermic

Typic Ustochrepts, LSM, 4, -1, loamy-skeletal, mixed, thermic consists of moderately deep, well drained soils that formed in residuum from granite and quartzite. They are on very steep mountains with slopes of 40 to 80 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SE1/4NW1/4 of sec. 10, T. 10 N., R. 4 E.

A1--0 to 5 centimeters; yellowish brown (10YR 5/4) very cobbly sandy loam; dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine pores; many very fine and fine roots; 60 percent rock fragments; slightly acid; abrupt smooth boundary.

A2--5 to 15 centimeters; brown (10YR 4/3) very cobbly sandy loam; dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine pores; many very fine to medium roots; 45 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw--15 to 28 centimeters; dark yellowish brown (10YR 4/4) very cobbly clay loam; dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine pores; many very fine to coarse roots; 35 percent rock fragments; neutral; abrupt wavy boundary.

C1--28 to 61 centimeters; yellowish brown (10YR 5/6) very gravelly sandy loam; dark yellowish brown (10YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; common very fine and fine roots; 40 percent rock fragments; neutral; clear wavy boundary.

C2--61 to 79 centimeters; yellowish brown (10YR 5/6) very gravelly sandy loam; dark yellowish brown (10YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine roots; 35 percent rock fragments; neutral; abrupt smooth boundary.

R--79+ centimeters; decomposed granite

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.0 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 20 to 70 percent rock fragments.

The B horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay loam or sandy clay loam. The cambic horizon has 35 to 70 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy loam or loamy sand. The soil has 35 to 70 percent rock fragments.

Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic

Typic Ustochrepts, LSM, 4, -1, calcareous, coarse-loamy, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4SE1/4 of sec. 35, T. 9 N., R. 10 E.

A--0 to 5 centimeters; brown (10YR 5/3) very gravelly loam; dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine pores; few very fine and fine roots; slight effervescence; 45 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk1--5 to 18 centimeters; grayish brown (10YR 5/2) gravelly loam; dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine to medium roots; strong effervescence; disseminated lime; 20 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk2--18 to 58 centimeters; light yellowish brown (10YR 6/4) very gravelly loam; dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightlyplastic; common very fine and fine pores; few very fine to medium roots; strong effervescence; disseminated lime; 40 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk3--58 to 89 centimeters; light brown (7.5YR 6/4) gravelly loam; brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine pores; few very fine to coarse roots; strong effervescence; disseminate lime; 20 percent rock fragments; moderately alkaline; clear wavy boundary.

Ck--89 to 102+ centimeters; light brownish gray (10YR 6/2) loam; grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine pores; few very fine to coarse roots; strong effervescence; disseminated lime; 5 percent rock fragments; moderately alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The Bwk horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 10 to 35 percent rock fragments.

The Ck horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 40 percent rock fragments.

Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic

Typic Ustochrepts, LSM, 4, -1, calcareous, fine-loamy, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NW1/4 of sec. 35, T. 9 N., R. 9 E.

A--0 to 3 centimeters; brown (10YR 4/3) gravelly loam; dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; common very fine and fine roots; slight effervescence; 20 percent rock fragments; mildly alkaline; abrupt smooth boundary.

Bwk1--3 to 28 centimeters; dark yellowish brown (10YR 4/4) loam; dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; strong effervescence; disseminated lime; 5 percent rock fragments; mildly alkaline; clear smooth boundary.

Bwk2--28 to 74 centimeters; yellowish brown (10YR 5/4) loam; dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; violent effervescence; disseminated lime; 5 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk3--74 to 99 centimeters; brown (10YR 5/3) loam; dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; common very fine and fine roots; strong effervescence; disseminated lime; 5 percent rock fragments; mildly alkaline; gradual smooth boundary.

2Bt--99 to 157 centimeters; yellowish brown (10YR 5/4) clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine pores; few very fine to coarse roots; slight effervescence; few moderately thick clay films; 5 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The Bwk horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 0 to 30 percent rock fragments.

The Ck horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 0 to 30 percent rock fragments.

Typic Ustochrepts, LSM, 4, -1, calcareous, loamy-skeletal, mixed, thermic

Typic Ustochrepts, LSM, 4, -1, calcareous, loamy-skeletal, mixed, thermic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 48 centimeters for annual precipitation, 16 degrees Celsius for annual air temperature, and 1400 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4NW1/4 of sec. 23, T. 9 N., R. 9 E.

Ak--0 to 10 centimeters; pale brown (10YR 6/3) very gravelly loam; brown (10YR 4/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine pores; common very fine to medium roots; violent effervescence; disseminated lime; 60 percent rock fragments; mildly alkaline; clear smooth boundary.

Bwk1--10 to 48 centimeters; light yellowish brown (10YR 6/4) very cobbly clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine pores; few very fine to medium roots; violent effervescence; disseminated lime; 40 percent rock fragments; mildly alkaline; abrupt wavy boundary.

Bwk2--48 to 74 centimeters; brown (7.5YR 5/4) very gravelly clay loam; brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 55 percent rock fragments; mildly alkaline; abrupt wavy boundary.

Bwk3--74 to 100+ centimeters; brown (7.5YR 5/4) gravelly clay loam; brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; hard, firm, sticky and plastic; common fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 20 percent rock fragments; mildly alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The Bwk horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 10 to 60 percent rock fragments.

Typic Ustochrepts, LSM, 4, calcareous, fine-loamy, mixed, mesic

Typic Ustochrepts, LSM, 4, calcareous, fine-loamy, mixed, mesic consists of deep, well drained soils that formed in calcareous alluvium and residuum from limestone. They are on nearly level to rolling plains with slopes of 0 to 15 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NW1/4 of sec. 22, T. 10 N., R. 9 E.

Ak--0 to 5 centimeters; light reddish brown (5YR 6/4) gravelly loam; reddish brown (5YR 5/4) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine pores; few very fine and fine roots; strong effervescence; disseminated lime; 25 percent rock fragments; mildly alkaline; clear smooth boundary.

Bwk1--5 to 25 centimeters; light reddish brown (5YR 6/4) loam; reddish brown (5YR 5/4) moist; weak medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 5 percent rock fragments; mildly alkaline; clear smooth boundary.

Bwk2--25 to 56 centimeters; light reddish brown (5YR 6/4) loam; reddish brown (5YR 5/4) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 5 percent rock fragments; moderately alkaline; gradual wavy boundary.

Ck--56 to 114+ centimeters; light reddish brown (5YR 6/4) loam; reddish brown (5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine pores; few very fine to medium roots; violent effervescence; disseminated lime; 10 percent rock fragments; moderately alkaline.

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The Bwk horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 5 to 35 percent rock fragments.

The Ck horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 5 to 35 percent rock fragments.

Typic Ustochrepts, LSM, 4, calcareous, loamy-skeletal, mixed, mesic

Typic Ustochrepts, LSM, 4, calcareous, loamy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in calcareous alluvium and residuum from limestone. They are on rolling to steep hills with slopes of 15 to 40 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4NE1/4 of sec. 23, T. 11 N., R. 9 E.

Ak--0 to 5 centimeters; grayish brown (10YR 5/2) very gravelly loam; dark grayish brown (10YR 4/2) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; few very fine and fine roots; violent effervescence; disseminated lime; 70 percent rock fragments; mildly alkaline; abrupt wavy boundary.

Bwk1--5 to 15 centimeters; grayish brown (10YR 5/2) very gravelly loam; dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine pores; few very fine roots; violent effervescence; disseminated lime; 40 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk2--15 to 38 centimeters; light brownish gray (10YR 6/2) very gravelly loam; brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine pores; few very fine to medium roots; violent effervescence; disseminated lime; 35 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk3--38 to 76 centimeters; white (10YR 8/2) very gravelly loam; pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine pores; few very fine to medium roots; violent effervescence; disseminated lime; 40 percent rock fragments; strongly alkaline; abrupt irregular boundary.

R--76+ centimeters; Gila conglomerate

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 5YR through 10YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 70 percent rock fragments.

The Bwk horizon has a hue of 5YR through 10YR, value of 4 through 8 dry, 3 through 6 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or clay loam. The cambic horizon has 35 to 80 percent rock fragments.

Udic Ustochrepts, LSC, 5, loamy-skeletal, mixed, frigid

Udic Ustochrepts, LSC, 5, loamy-skeletal, mixed, frigid consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They occur on plains, hills and mountains on slopes of 0 to 80 percent. Means are 65 centimeters annual precipitation, 6 degrees Celsius annual air temperature and 2300 meters elevation. About 50 percent of the precipitation occurs in the cool season (1 October to 31 March).

A representative pedon of this soil is located in NW1/4NW1/4 of sec. 11, T.10 N., R. 15 E.

A--0 to 5 centimeters; grayish brown (10YR 5/2) very gravelly sandy loam; very dark grayish brown (10YR 3/2) moist; single grain structure; loose, loose, non-sticky and non-plastic; many very fine pores; few very fine; 35 percent rock fragments; violent effervescence; disseminated lime; moderately alkaline; clear smooth boundary.

Bw--5 to 38 centimeters; pinkish gray (7.5YR 6/2) very gravelly clay loam; brown (7.5YR 4/2) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine pores; many very fine to medium roots; violent effervescence; disseminated lime; 40 percent rock fragments; strongly alkaline; abrupt wavy boundary.

BC--38 to 52 centimeters; light gray (5YR 7/1) very gravelly sandy loam; pinkish gray (7.5YR 6/2) moist; strong medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine pores; common very fine to coarse roots; violent effervescence; disseminated lime; 50 percent rock fragments; strongly alkaline; abrupt wavy boundary.

CR--52 to 100 centimeters; highly fractured and weathered calcareous shale.

The solum thickness ranges from 50 to 100+ centimeters and the depth to bedrock is graeater than 50 centimeters. The reaction of the solum ranges from 7.6 to 8.8

The A horizon has a hue of 5YR through 10YR, value of 4 through 7 dry, 2 through 5 moist and a chroma of 2 through 4. The texture of the fine earth fraction is loam or sandy loam. The soil has 30 to 60 percent rock fragments.

The B horizon has a hue of 5YR through 7.5YR, value of 4 through 6 dry, 2 through 6 moist and a chroma of 1 through 4. The texture of the fine earth fraction is clay loam or loam. The cambic horizon has 35 to 70 percent rock fragments.

The CR horizon consists of fractured and weathered limestone, sandstone or shale.

Udic Ustochrepts, LSM, 5, loamy-skeletal, mixed, mesic

Udic Ustochrepts, LSM, 5, loamy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in alluvium and residuum from mixed sources. They are on nearly level to very steep plains, hills and mountains with slopes of 0 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NE1/4SW1/4 of sec. 27, T. 11 N., R. 10 E.

A--0 to 5 centimeters; dark yellowish brown (10YR 4/4) gravelly sandy loam; dark yellowish brown (10YR 3/4) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine to medium pores; few very fine and fine roots; 15 percent rock fragments; neutral; clear smooth boundary.

Bw1--5 to 15 centimeters; strong brown (7.5YR 4/6) gravelly sandy loam; brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few fine and medium roots; 15 percent rock fragments; neutral; gradual smooth boundary.

Bw2--15 to 38 centimeters; brown (7.5YR 5/4) gravelly sandy loam; strong brown (7.5YR 4/6) moist; weak fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine pores; few fine to coarse roots; 30 percent rock fragments; neutral; gradual wavy boundary.

Bw3--38 to 58 centimeters; reddish yellow (7.5YR 6/6) very gravelly sandy loam; strong brown (7.5YR 4/6) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few fine and medium roots; 40 percent rock fragments; neutral; gradual wavy boundary.

C--58 to 89 centimeters; strong brown (7.5YR 5/6) very gravelly sandy loam; strong brown (7.5YR 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine pores; few fine roots; 40 percent rock fragments; slightly acid; abrupt wavy boundary.

R--89+ centimeters; granite

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 6.2 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is sandy loam or loam. The soil has 5 to 60 percent rock fragments.

The Bw horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy loam, sandy clay loam or loam. The cambic horizon has 35 to 70 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is sandy loam. The soil has 35 to 70 percent rock fragments.

Udic Ustochrepts, LSM, 5, calcareous, loamy-skeletal, mixed, mesic

Udic Ustochrepts, LSM, 5, calcareous, loamy-skeletal, mixed, mesic consists of moderately deep and deep, well drained soils that formed in calcareous residuum from sandstone, shale and limestone. They are on rolling to very steep hills, mountains and scarps with slopes of 15 to 80 percent. Means are 64 centimeters for annual precipitation, 11 degrees Celsius for annual air temperature, and 1900 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the SW1/4SW1/4 of sec. 32, T. 12 N., R. 12 E.

Oi--8 to 0 centimeters; undecomposed needles, leaves and twigs

Ak--0 to 13 centimeters; brown (10YR 5/3) very gravelly loam; very dark grayish brown (10YR 3/2) moist; weak medium and coarse granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine and fine roots; strong effervescence; disseminated lime; 45 percent rock fragments; mildly alkaline; abrupt wavy boundary.

Bwk1--13 to 51 centimeters; light yellowish brown (10YR 6/4) very gravelly loam; yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 60 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk2--51 to 74 centimeters; light yellowish brown (10YR 6/4) very gravelly loam; yellowish brown (10YR 5/6) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 40 percent rock fragments; mildly alkaline; clear wavy boundary.

Bwk3--74 to 89 centimeters; strong brown (7.5YR 5/6) very gravelly loam; strong brown (7.5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine pores; few very fine to coarse roots; violent effervescence; disseminated lime; 50 percent rock fragments; mildly alkaline; abrupt irregular boundary.

R--89+ centimeters; sandstone

The soil depth to bedrock is greater than 50 centimeters. The reaction of the soil ranges from 7.4 to 8.2.

The A horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 2 through 6. The texture of the fine earth fraction is loam or sandy loam. The soil has 10 to 60 percent rock fragments.

The Bw horizon has a hue of 10YR or 7.5YR, value of 4 through 6 dry, 3 through 5 moist and a chroma of 4 through 6. The texture of the fine earth fraction is loam or sandy clay loam. The cambic horizon has 35 to 70 percent rock fragments.

Cumulic Haploborolls, LSC, 5

Cumulic Haploborolls, LSC, 5, consist of deep moderately well drained soils that formed in recent alluvium. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means range from 60 to 70 centimeters for precipitation, 7 to 9 degrees Celsius for annual air temperature and 2100 to 2400 meters for elevation. Approximately 50 percent of the normal precipitation occurs during the period of 1 April to 31 September.

A representative pedon of this soil is not included due to variability at this categorical level.

The depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 5.6 to 7.0.

These soils have A and C horizons. They may or may not have B horizons.

The A horizon has a hue of 10YR or 7.5YR, value of 2 through 4 dry, 1 through 3 moist, and chroma of 1 through 3. The texture of the fine earth fraction ranges from sandy loam to loam. The rock fragment content ranges from 0 to 40 percent.

The C horizon has a hue of 10YR or 7.5YR, value of 2 through 4 dry, 2 through 4 moist, and chroma of 2 through 4. The texture of the fine earth fraction ranges from sandy loam to loam. The rock fragment content ranges from 0 to 60 percent.

Pachic Argiustolls, LSM, 4, fine, mixed mesic

Pachic Argiustolls, LSM, 4, fine, mixed mesic consists of deep, moderately well drained soils that formed in alluvium. They are on nearly level to strongly sloping plains with slopes of 0 to 15 percent. Means are 52 centimeters for annual precipitation, 15 degrees Celsius for annual air temperature, and 1500 meters for elevation. Approximately 55 percent of the normal precipitation occurs during the period of 1 October to 31 March.

A representative pedon of this soil is located in the NW1/4SW1/4 of sec. 18, T. 9 N., R. 14 E.

A1--0 to 5 centimeters; dark grayish brown (10YR 4/2) gravelly sandy loam; very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; common fine pores; many fine roots; 15 percent rock fragments; slightly acid; clear smooth boundary.

A2--5 to 25 centimeters; dark gray (10YR 4/1) gravelly clay loam; very dark gray (10YR 3/1) moist; strong coarse granular structure; slightly hard, friable, slightly sticky and slightlyplastic; common fine pores; common fine roots; 15 percent rock fragments; neutral; clear smooth boundary.

Bt1--25 to 36 centimeters; dark grayish brown (10YR 4/2) clay loam; very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine pores; common fine roots; common moderately thick clay films; 5 percent rock fragments; neutral; gradual wavy boundary.

Bt2--36 to 61 centimeters; dark grayish brown (10YR 4/2) clay; very dark grayish brown (10YR 3/2) moist; moderate fine prismatic to strong medium angular blocky structure; very hard, very firm, very sticky and very plastic; few fine pores; common fine roots; many moderately thick clay films; 10 percent rock fragments; neutral; gradual smooth boundary.

Bt3--61 to 86 centimeters; dark grayish brown (10YR 4/2) silty clay; very dark grayish brown (10YR 3/2) moist; moderate medium prismatic to strong coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine pores; few fine roots; many thick clay films; 5 percent rock fragments; neutral; clear smooth boundary.

Bt4--86 to 117 centimeters; brown (7.5YR 4/2) very gravelly clay loam; dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine pores; few very fine roots; few thin clay films; 45 percent rock fragments; neutral; clear smooth boundary.

C--117 to 152+ centimeters; brown (7.5YR 4/4) very gravelly clay loam; dark brown (7.5YR 3/4) moist; massive; hard, firm, sticky and plastic; common fine pores; few very fine roots; 50 percent rock fragments; neutral.

The soil depth to bedrock is greater than 100 centimeters. The reaction of the soil ranges from 6.2 to 7.3.

The A horizon has a hue of 10YR or 7.5YR, value of 3 through 5 dry, 2 through 4 moist and a chroma of 1 through 3. The texture of the fine earth fraction is sandy loam, clay loam or loam. The soil has 0 to 30 percent rock fragments.

The Bt horizon has a hue of 10YR or 7.5YR, value of 3 through 5 dry, 2 through 4 moist and a chroma of 1 through 3. The texture of the fine earth fraction is clay, silty clay or clay loam. The argillic horizon has 0 to 20 percent rock fragments.

The C horizon has a hue of 10YR or 7.5YR, value of 3 through 5 dry, 2 through 4 moist and a chroma of 2 through 6. The texture of the fine earth fraction is clay loam, sandy clay loam or loam. The soil has 30 to 60 percent rock fragments.

Cercidium microphyllum/ Cereus giganteus/ Prosopis velutina/ Simmondsia chinensis

This subseries occurs in climate class LSM, 2, 0 and is abbreviated Cemi2/Cegi/Prve/Sich for classification purposes. It is characterized by Sonoran Desert shrubs dominated by Cercidium microphyllum and Cereus giganteus. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 28 centimeters. Mean annual air temperature is 20 degrees Celsius. Mean elevation is 600 meters.

A representative site for this subseries is located in SE1/4,SW1/4,Sec.5, T2N,R11E.

The understory is typically a shrub community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Canotia holacantha and Larrea divaricata; rocky soils favor Fouqueria splendens, Cereus giganteus and Opuntia bigelovii; clay soils tend to suppress Cereus giganteus and Simmondsia chinensis. Cereus giganteus blooms in the red color spectrum and tends to increase on southwest aspects.

Commonly occuring species: Prosopis velutina, Ceanothus greggii, Yucca baccata, Yucca elata, Muhlenbergia porteri, Simmondsia chinensis, Cereus giganteus, Cercidium microphyllum, Lycium pallidum, Celtis pallida, Acacia greggii, Opuntia, Calliandra eriophylla.

Variant Communities:

Cercidium microphyllum/ Prosopis velutina/ Simmondsia chinensis occurs on clay soils and in areas of reduced solar intensity, either of which will retard development of the Cereus giganteus component.

Cercidium microphyllum/ Cereus giganteus/ Prosopis velutina/ Canotia holacantha Larrea divaricata occurs on calcareous soils.

Cercidium microphyllum/ Cereus giganteus/ Prosopis velutina/ Simmondsia chinensis/ Fouqueria splendens occurs on rocky soils.

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Prosopis velutina

This series occurs in climate class LSM, 2 and is abbreviated Prve for classification purposes. It is characterized by mesquite bosques, with Cercidium floridum included on well drained sites. It occurs on valley plains, adjacent to stream beds, with slopes of 0 to 15 percent. Mean annual precipitation is 28 centimeters. Mean annual air temperature is 20 degrees Celsius. Mean elevation is 500 meters.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Prosopis velutina/ Berberis haematocarpa/ Bouteloua hirsuta/ Bouteloua eriopoda

This subseries occurs in climate class LSM, 3, 0 and is abbreviated as Prve/Beha/Bohi2/Boer4 for classification purposes. It is characterized by grasslands with an open canopy of Prosopis velutina and Berberis haematocarpa. It occurs on elevated plains and hills with slopes of 0 to over 40 percent. Mean annual precipitation is 40 centimeters. Mean annual air temperature is 17 degrees Celsius. Mean elevation is 1200 meters.

A representative site for this subseries is located in SW1/4,NE1/4,Sec.5, T8N,R10E.

The understory is typically a shrub/grassland community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Canotia holacantha and Larrea divaricata; shallow, rocky soils favor Fouqueria splendens; clay soils favor rhizomatous plants, such as Hilaria belangeri.

Commonly occuring species: Prosopis velutina, Ceanothus greggii, Yucca baccata, Yucca elata, Dasylirion wheelerii, Bouteloua, Stipa, Aristida, Andropogon, Muhlenbergia porteri, and Hilaria belangeri.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Prosopis velutina/ Berberis haematocarpa/ Acacia greggii/ Gutierrezia Sarothrae

This subseries occurs in climax class LSM, 3, +1 and is abbreviated as Prve/Beha/Acgr/Gusa2 for classification purposes. It is characterized by severely degraded grasslands with a canopy of Prosopis velutina, Berberis haematocarpa and Acacia greggii. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 44 centimeters. Mean annual air temperature is 16 degrees Celsius. Mean elevation is 1300 meters.

A representative site for this subseries is located in NE1/4,NW1/4,Sec.3, T6N,R8E.

The understory is typically a shrub/remnant grassland community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Canotia holacantha and Larrea divaricata; shallow, rocky soils favor Fouqueria splendens; clay soils favor rhizomatous plants, such as Hilaria belangeri.

Commonly occuring species: Prosopis velutina, Ceanothus greggii, Yucca baccata, Yucca elata, Dasylirion wheelerii, Quercus turbinella, Bouteloua, Stipa, Aristida, Andropogon, Muhlenbergia porteri, and Hilaria belangeri.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Populus fremontii

This series occurs in climate class LSM, 3-4 and is abbreviated Pofr2 for classification purposes. It is characterized by riparian stands of Populus fremontii, with Juniperus osteosperma included on well drained sites and Prosopis velutina included at lower elevations. It occurs on valley plains, along stream beds, with slopes of 0 to 15 percent. Mean annual precipitation ranges from 35 to 60 centimeters. Mean annual air temperature ranges from 13 to 19 degrees Celsius. Mean elevation ranges from 700 to 1400 meters.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Juniperus osteosperma/ Juniperus erythrocarpa/ Prosopis velutina/ Quercus turbinella

This subseries occurs in climate class LSM, 4, -1 and is abbreviated Juos/ Juer/Prve/Qutu2 for classification purposes. It is characterized by open stands of Juniperus osteosperma, Juniperus erythrocarpa and Prosopis velutina, with a well developed understory of Quercus turbinella. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 48 centimeters. Mean annual air temperature is 15 degrees Celsius. Mean elevation is 1400 meters.

A representative site for this subseries is located in SE1/4,SE1/4,Sec.33, T10N,R10E.

The understory is typically a shrub community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Canotia holacantha; deep heavy clay soils tend to restrict shrub development and favor rhizomatous grasses, such as Hilaria belangeri.

Commonly occuring species: Juniperus osteosperma, Juniperus erythrocarpa, Prosopis velutina, Quercus turbinella, Ceanothus greggii, Nolina microcarpa, Yucca baccata and Yucca elata.

Variant Communities:

Juniperus osteosperma/ Juniperus erythrocarpa/ Prosopis velutina/ Quercus turbinella/ Canotia holacantha occurs on calcareous soils.

Juniperus osteosperma/ Juniperus erythrocarpa/ Prosopis velutina/ Hilaria belangeri occurs on deep clay soils.

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus monophylla/ Juniperus osteosperma/ Quercus turbinella/ Arctostaphylos pungens

This subseries occurs in climate class LSM, 4, 0 and is abbreviated Pimo/Juos/Qutu2/Arpu5 for classification purposes. It is characterized by mixed stands of Pinus monophylla, Juniperus osteosperma, Quercus turbinella and Arctostaphylos pungens. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 52 centimeters. Mean annual air temperature is 14 degrees Celsius. Mean elevation is 1500 meters.

A representative site for this subseries is located in SW1/4,NW1/4,Sec.22, T11N,R10E.

The understory is typically a shrub community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Canotia holacantha and Cowania mexicana stansburiana; deep heavy clay soils tend to restrict shrub development and favor rhizomatous grasses, such as Hilaria belangeri and Panicum obtusum; rocky soils favor Cercocarpus montana and Quercus emoryii.

Commonly occuring species: Juniperus osteosperma, Pinus monophylla, Quercus turbinella, Arctostaphylos pungens, Ceanothus greggii, Nolina microcarpa, Yucca baccata and Yucca elata.

Variant Communities:

Pinus monophylla/ Juniperus osteosperma/ Quercus turbinella/ Arctostaphylos pungens/ Canotia holacantha occurs on calcareous soils.

Pinus monophylla/ Juniperus osteosperma/ Hilaria belangeri occurs on deep clay soils.

Quercus emoryii/ Quercus turbinella/ Arctostaphylos pungens is a fire-edaphic community, most common on rocky soils

Cupressus glabra/ Pinus monophylla/ Quercus turbinella/ Arctostaphylos pungens is a post-climax fire community commonly found on steep, moist, north aspects and drainages in old burn areas; the cypress conponent sometimes occurs in nearly pure stands.

Cupressus glabra/ Pinus monophylla/ Quercus turbinella/ Arctostaphylos pungens/ Canotia holacantha is a topo-edaphic post-climax fire community commonly found in calcareous soils on steep, moist, north aspects and drainages in old burn areas; cypress stands are relatively open, usually with conspicuous erosion.

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus monophylla/ Juniperus deppeana/ Juniperus osteosperma/ Quercus arizonica/ Quercus turbinella/ Arctostaphylos pungens

This subseries occurs in climate class LSM, 4, +1 and is abbreviated Pimo/Jude2/Juos/Quar/Qutu2/Arpu5 for classification purposes. It is characterized by mixed stands of Pinus monophylla, Juniperus deppeana, Quercus arizonica, Quercus turbinella and Arctostaphylos pungens, with occasional stands of Juniperus osteosperma. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 56 centimeters. Mean annual air temperature is 13 degrees Celsius. Mean elevation is 1600 meters.

A representative site for this subseries is located in SE1/4,NW1/4,Sec.16, T10N,R13E.

The understory is typically a shrub community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Cowania mexicana stansburiana; deep heavy clay soils tend to restrict shrub development and favor rhizomatous grasses, such as Bouteloua gracilis and Panicum obtusum; rocky soils favor Cercocarpus montana and Quercus emoryii.

Commonly occuring species: Juniperus deppeana, Pinus monophylla, Quercus arizonica, Quercus turbinella, Arctostaphylos pungens, Ceanothus greggii, Nolina microcarpa, Agave, Rhamnus crocea, Cercocarpus montanus, Bouteloua gracilis, Bouteloua hirsuta.

Variant Communities:

Pinus monophylla/ Juniperus deppeana/ Juniperus osteosperma/ Quercus arizonica/ Bouteloua gracilis occurs on deep clay soils.

Bouteloua gracilis/ Juniperus deppeana/ Quercus turbinella/ is a zootic community on fine textured soils which have adequate moisture for certain deep rooted shrub species.

Bouteloua gracilis/ Juniperus deppeana/ is a zootic community which occurs on deep clay soils in old juniper push areas.

Panicum obtusum/ Bouteloua gracilis/ Juniperus deppeana is a zootic community in severely impacted juniper push areas with expanding clay soils; these soils have usually reached the churning stage.

Quercus emoryii/ Cercocarpus montanus is a fire-edaphic community, most common on rocky soils

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus ponderosa/ Pinus monophylla/ Juniperus deppeana/ Quercus arizonica/ Quercus turbinella/ Arctostaphylos pungens/ Arctostaphylos pringlei

This subseries occurs in climate class LSM, 5, -1 and is abbreviated Pipo/Pimo/Jude2/Quar/Qutu2/Arpu5/Arpr for classification purposes. It is characterized by an overstory of Pinus ponderosa, Pinus monophylla, Juniperus deppeana and Quercus arizonica, with an understory of Quercus turbinella and Arctostaphylos pungens and occasional stands of Arctostaphylos pringlei. It occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 60 centimeters. Mean annual air temperature is 11 degrees Celsius. Mean elevation is 1700 meters.

A representative site for this subseries is located in NE1/4,SW1/4,Sec.27, T11N,R10E.

The understory is typically a shrub community, which varies somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Cowania mexicana stansburiana; deep heavy clay soils tend to restrict shrub development and favor rhizomatous grasses, such as Bouteloua gracilis and Panicum obtusum; rocky soils favor Cercocarpus montana and Quercus emoryii.

Commonly occuring species: Pinus ponderosa, Juniperus deppeana, Pinus monophylla, Quercus arizonica, Quercus emoryii, Quercus turbinella, Arctostaphylos pungens, Arctostaphylos pringlei, Nolina microcarpa, Agave, Rhamnus crocea, Cercocarpus montanus, Bouteloua gracilis, Bouteloua hirsuta.

Variant Communities:

Pinus ponderosa/ Pinus monophylla/ Juniperus deppeana/ Quercus arizonica/ Bouteloua gracilis occurs on deep clay soils.

Populus angustifolia occurs on valley plains along stream beds, usually with other phreatophytes. Pinus ponderosa is included on well drained sites.

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica/ Quercus turbinella/ Arctostaphylos pungens/ Arctostaphylos pringlei

This subseries occurs in climate class LSM, 5, 0 and is abbreviated Pipo/ Jude2/Quar/Qutu2/Arpu5/Arpr for classification purposes. It is characterized by a partly closed canopy of Pinus ponderosa, Juniperus deppeana and Quercus arizonica, with a suppressed understory of Quercus turbinella, Arctostaphylos pungens and Arctostaphylos pringlei. Understory development is directly related to available light, increasing in dominance as overstory canopy decreases. This community occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 64 centimeters. Mean annual air temperature is 10 degrees Celsius. Mean elevation is 1900 meters.

A representative site for this subseries is located in SW1/4,SE1/4,Sec.31, T10N,R10E.

The understory is normally suppressed, giving way to scattered shrubs on open sites, but varying somewhat with changes in soil properties and microclimate. For example, calcareous soils favor Cowania mexicana stansburiana; deep heavy clay soils tend to restrict shrub development; rocky soils favor Quercus emoryii.

Commonly occuring species: Pinus ponderosa, Juniperus deppeana, Quercus arizonica, Quercus emoryii, Quercus turbinella, Arctostaphylos pungens, Arctostaphylos pringlei, Agave, Bouteloua gracilis, Leptochloa dubia, Muhlenbergia longiligula.

Variant Communities:

Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica occurs on deep clay soils.

Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica/ Quercus turbinella/ Arctostaphylos pungens/ Cowania mexicana stansburiana occurs on limestone.

Quercus arizonica/ Quercus turbinella/ Arctostaphylos pringlei is a fire community

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica/ Robinia neomexicana/ Arctostaphylos pringlei

This subseries occurs in climate class LSM, 5, +1 and is abbreviated Pipo/ Jude2/Quar/Rone/Arpr for classification purposes. It is characterized by a partly closed canopy of Pinus ponderosa, Juniperus deppeana and Quercus arizonica, with a suppressed understory of Arctostaphylos pringlei and Robinia neomexicana. Understory development is directly related to available light, increasing in dominance as overstory canopy decreases. This community occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 68 centimeters. Mean annual air temperature is 9 degrees Celsius. Mean elevation is 2100 meters.

A representative site for this subseries is located in NE1/4,NE1/4,Sec.35, T12N,R10E.

The understory is normally suppressed, giving way to scattered shrubs on open sites, but varying somewhat with changes in soil properties and microclimate. For example, calcareous soils tend to decrease timber production; deep heavy clay soils both decrease timber production and restrict shrub development.

Commonly occuring species: Pinus ponderosa, Juniperus deppeana, Quercus arizonica, Arctostaphylos pringlei, Robinia neomexicana, Ceanothus fendleri, Achillia millifolia lanulosa, Verbascum thapsis, Poa fendleriana, Poa pratensis, Leptochloa dubia, Muhlenbergia longiligula.

Variant Communities:

Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica occurs on deep clay soils.

Quercus arizonica/ Robinia neomexicana/ Arctostaphylos pringlei is a fire community

Further information on the composition of these plant communities is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pseudotsuga menziesii glauca/ Pinus ponderosa/ Juniperus deppeana/ Quercus arizonica/ Arctostaphylos pringlei

This subseries occurs in climate class LSM, 6, -1 and is abbreviated Psmeg/Pipo/Jude2/Quar/Arpr for classification purposes. It is characterized by a partly closed canopy of Pseudotsuga menziesii glauca, Pinus ponderosa, Juniperus deppeana and Quercus arizonica, with a suppressed understory of Arctostaphylos pringlei and Robinia neomexicana. Understory development is directly related to available light, increasing in dominance as overstory canopy decreases. This community occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 72 centimeters. Mean annual air temperature is 8 degrees Celsius. Mean elevation is 2200 meters.

A representative site for this subseries is located in NW1/4,NE1/4,Sec.19, T11N,R13E.

The understory is normally suppressed, giving way to scattered shrubs on open sites, but varying somewhat with changes in soil properties and microclimate. Precipitation greater than 70 centimeters will compensate for many adverse soil conditions, but deep clay and carbonates tend to reduce seedling success.

Commonly occuring species: Pseudotsuga menziesii glauca, Pinus ponderosa, Juniperus deppeana, Quercus arizonica, Robinia neomexicana, Arctostaphylos pringlei, Muhlenbergia montana, Leptochloa dubia, Muhlenbergia longiligula.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Populus angustifolia

This series occurs in climate class LSC, 5 and is abbreviated Poan3 for classification purposes. It is characterized by riparian stands of Populus fremontii, Quercus gambelii and Juglans major. It occurs on valley plains, along stream beds, with slopes of 0 to 15 percent. Mean annual precipitation ranges from 65 to 85 centimeters. Mean annual air temperature ranges from 6 to 10 degrees Celsius. Mean elevation ranges from 1900 to 2200 meters.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Pinus ponderosa/ Quercus gambelii

This subseries occurs in climate class LSC, 5, 0 and is abbreviated Pipo/Quga for classification purposes. It is characterized by a partly closed canopy of Pinus ponderosa and Quercus gambelii. This community occurs on elevated plains, hills and mountains with slopes of 0 to over 80 percent. Mean annual precipitation is 56 centimeters. Mean annual air temperature is 5 degrees Celsius. Mean elevation is 2100 meters.

A representative site for this subseries is located in NW1/4,SW1/4,Sec.36, T10.5N,R14E.

The understory is normally suppressed, giving way to a scattered grass/forb community on open sites. Heavy needlecast normally covers the forest floor.

Commonly occuring species: Pinus ponderosa, Juniperus deppeana, Quercus gambelii, Ceanothus fendleri, Verbascum thapsis, Achillea millefolia lanulosa, Leptochloa dubia, Muhlenbergia longiligula, Poa fendleriana, Poa pratensis.

Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Abies concolor/ Pseudotsuga menziesii glauca/ Pinus ponderosa/ Pinus strobiformis/ Quercus gambelii

This subseries occurs in climate class LSC, 6, 0 and is abbreviated Abco/Psmeg/Pipo/Pist2/Quga for classification purposes. It is characterized by a discontinuous stand of Abies concolor, Pseudotsuga menziesii glauca, Pinus ponderosa, Pinus strobiformis and Quercus gambelii along the Mogollon Rim. This community occurs on mountains and scarps with slopes from 40 to over 120 percent. Mean annual precipitation is 68 centimeters. Mean annual air temperature is 4 degrees Celsius. Mean elevation is 2200 meters.

A representative site for this subseries is located in SW1/4,SE1/4,Sec.36, T12N,R11E.

Commonly occuring species: Abies concolor, Pseudotsuga menziesii glauca, Pinus ponderosa, Pinus strobiformis, Quercus gambelii, Pteridium aquilinium, poa fenleriana.
Further information on the composition of this plant community is presented in section 5.0 of the form entitled "Map Unit Description, Properties and Selected Interpretations".

Integration of Terrestrial Ecosystem Components:

The complex interaction of climate, soil and vegetation gives rise to several different terrestrial ecosystems. The interrelationship between soil, climate and vegetation is depicted in the following diagram:

```
          CLIMATE
             *
        *   TE   *
SOIL <------> VEGETATION
```

The diagram indicates that soil and vegetation are influenced by climate and by each other. The product of these interactions is a terrestrial ecosystem.

The three components of a terrestrial ecosystem can be arranged into an infinite number of combinations. Gradient analysis is used to integrate these components to a realistic number. The basis for the initial segmentation of the gradient into uniform segments is by soil moisture and temperature regimes. This results in the preliminary continuum. The correlation of indicator plants with the soil moisture-temperature regimes results in a further refinement of the segments. The final phase consists of integrating soil categories (Soil Taxonomy) to form individual terrestrial ecosystems. The resultant ordered alignment of terrestrial ecosystems is a continuum of climax categories of vegetation and their associated soils. These ecosystems are arranged sequentially in climatic columns numbered 1-8 along a gradient from hot-dry to cold-wet extremes. Within each climatic column ecosystems can be related to climax and disclimax classes. It is possible to move from climax to disclimax or vice-versa within limits indicated in the columns, but not between columns.

Tab' 3: Low Sun - Mild Condensed Climatic Gradient (Neutral Soils, Topographic Control)

LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	LSM	CLIMATIC GRADIENT:	Official Wx. Stations:
1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	COLUMN	LSM 2,-1 @ Apache Jct.
0	+1	-1	0	+1	-1	0	+1	-1	0	+1	-1	0	+1	-1	PHASE	LSM 3,0 @ Globe
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	AVERAGE TEMPERATURES:	8/31/85
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	AIR, ANNUAL, deg. F	SUPERCALC
---	---	22 (22)	---	---	---	18 (18)	---	---	---	---	---	---	---	---	AIR, ANNUAL, deg. C	LSM85.1
73	72	70	68	66	64	63	61	59	57	55	52	50	48	46	SOIL, ANNUAL, deg. F	
23	22 (22)	21	20 (20)	19	18	17 (17)	16	15	14 (13)	13	11	10	9	8	SOIL, ANNUAL, deg. C	
---	---	---	---	---	---	---	---	64	63	61	59	57	55	54	SOIL, SUMMER, deg. F	
---	---	---	---	---	---	---	---	18	17	16	15	14	13	12	SOIL, SUMMER, deg. C	
---	---	---	50	---	---	44.6	---	---	41	---	---	---	---	---	SOIL, WINTER, deg. F	
---	---	---	(10)	---	---	(7)	---	---	(5)	---	---	---	---	---	SOIL, WINTER, deg. C	
310	300	290(290)	260	250	240	230	220	210	200	190	180	170	160	150	FREEZE-FREE DAYS	
6	8	9	11	13	14	16	17	19	20	22	24	25	27	28	ANNUAL PRECIP., in.	
16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	ANNUAL PRECIP., cm.	
0	0	0	0	0	0	0	10	20	30	40	50	90	120	170	ANNUAL SNOWFALL, cm.	
0	0	0	0	0	0	0	0	0	0	0	0	10	20	30	ANNUAL SNOWFALL, in.	
---	---	---	---	---	---	---	---	---	---	---	---	12/15-3/1	12/15-3/1	12/15-3/15	SNOW ACCUM. PERIOD (mo.)	
---	---	---	(10)	(60)	---	(50)	---	---	(51)	---	---	(53)	---	---	LOW SUN PRECIP., % Annual	
3.0	3.0	3.0	3.0	3.0	3.6	3.6	3.6	4.0	4.0	4.0	4.6	4.6	4.6	5.0	2 Yr./6 Hr. Storm (cm.)	
984	1312	1640	1968	2624	3280	3936	4264	4592	4920	5248	5576	6232	6888	7216	MEAN ELEV., feet	
300	400	500	600	800	1000	1200	1300	1400	1500	1600	1700	1900	2100	2200	MEAN ELEV., meters	
Aridic	Aridic	Aridic	Aridic	Aridic	Ustic	Ustic	Ustic	Ustic	Ustic	Ustic	Ustic	Ustic	Ustic	Udic	SOIL MOISTURE REGIME	
Hyperth.	Hyperth.	Thermic	Thermic	Thermic	Thermic	Thermic	Thermic	Thermic	Mesic	Mesic	Mesic	Mesic	Mesic	Mesic	SOIL TEMPERATURE REGIME	
<<<<<(DESERT)>>>>>>>		<<<<<<<(DESERT SHRUB)>>>>>>>>>>			<<<<<<<<<(GRASSLAND)>>>>>>>>>>			<<<(CHAPARRAL/WOODLAND)>>>>>>>			<<<<<<<<<<<(FOREST)>>>>>>>>>>>>>>>>>>>>				:FOLIAR CANOPY %:	
0	2	3	5	7	0	0	0	10	25	40	50	65	70	75	: TREES	
10	10	10	15	20	20	15	20	25	30	40	25	15	10	5	: SHRUBS	
0	0	T	T	T	2	2	2	2	2	3	5	5	10	15	: FORBS	
0	0	5	10	15	15	25	15	10	10	5	5	5	5	3	: GRAMMINOIDS	
.5	.5	1	1	1	1	1	1	2	2	2	4	4	4	3	:CANOPY BASE HT.(m)	
0	0	0	5	5	10	10	15	10	10	10	50	75	80	85	:LITTER %	
100	100	100	90	85	75	70	75	80	80	80	40	15	10	5	:BARREN %	
0	0	0	5	10	15	20	10	10	10	10	10	10	10	10	:BASAL AREA %	
0	0	.05	.15	.2	.35	.45	.55	.8	1.2	1.6	2	2.5	2.8	3.5	:ORGANIC MATTER %	
															:PRODUCTION:	
25	50	100	200	300	400	500	600	650	700	750	800	500	400	300	: HERBAGE #/ac/yr	
0	0	50	100	150	300	400	200	150	100	50	50	50	50	50	: FORAGE #/ac/yr	
0	0	50	150	200	350	450	550	800	1200	1600	2000	2500	2800	3500	: F. MAX. #/ac/yr	
---	---	---	---	---	---	---	---	---	---	---	Pipo/55	Pipo/70	Pipo/75	Pipo/65 Psmeq/70	: TIMBER SPECIES/ S.I.	
---	---	---	---	---	---	---	---	1	8	16	4	---	---	---	: FUELWOOD cords/acre	
Frde	Frde	Cemi2	Cemi2	Cemi2	Boer4	Boer4	Boer4	Juos	Juos	Juos	Pipo	Pipo	Pipo	Psmeq	VEGETATIVE SERIES	
Cemi2 Cegi Frde	Cemi2 Cegi Olte Frde	Cemi2 Cegi (Sich) Frde	Cemi2 Cegi Prve Sich	Cemi2 Cegi Prve Beha Sich	Prve Beha Boer4	Prve Beha Bohi2 Boer4	Prve Beha (Qutu2) Boer4 Bohi2 Sihy	Juos (Juer) (Jumo) Prve Qutu2	Pimo Juos (Jumo) Qutu2 Arpu5	Pimo Jude2 (Juos) Quar Qutu2 Arpu5	Pipo Pimo Jude2 Quar Qutu2 Arpu5 Arpr	Pipo Jude2 Quar Arpu5 Arpr	Pipo Jude2 Quar Rone Arpr	Psmeq Pipo Jude2 Quar Arpr	VEGETATIVE SUBSERIES	
NA	NA	NA	1100	NA	NA	3230	NA	3760	3730	5471 (WARM)	5350	5250	5650	6250	Representative Map Unit	

Table 3: Low Sun - Cold Climatic Gradient (Use Columns 5 & 6 Only)

1	2	3	4	5	6	7	8	Descriptors LSC Climate		
								NOAA Wx. Sta:		
		—	8	5	4	1		MAAT	deg. C	0
		—	9	6	5	2				-1
		10	7	5	8	0				+1
		—	8[9]	6[5]	5[5]	2		MAST	deg. C	0
		—	10	7[7]	6	3[3]				-1
		11[12]	8	6	4	1				+1
				12	9	6		MSST	deg. C	0
				13	10	7				-1
				11	8	5				+1
		—	5	2	1	-1		MWST	deg. C	0
		—	6	3	2	0				-1
		7	4	2	0	-2				+1
			130(126)	100	90	80		FFP	no. days	0
		—	140	110	100	70				-1
		145	120	100	80	50				+1
		—	40[35]	56	68	76		MAP	cm	0
		—	36	50	64	74				-1
		32	46	60	72	80				+1
		—	90	120	150	180		MAS	cm	0
		—	80	110	140	170				-1
		70	100	130	160	190				+1
		—	20P	35C	70C	120C		MASA	cm	0
		—	15P	30C	60C	100C				-1
		10P	25P	40C	90C	150C				+1
		—	12/1	11/1	10/15	10/1		SP	mo.(s)	0
			4/1	4/15	4/15	5/15				
		—	12/1	11/1	11/1	10/1				-1
			4/1	4/15	4/15	5/15				
		12/1	11/15	11/1	10/1	10/1				+1
		4/1	4/1	4/15	4/15	5/15				
		60	60	55	50	50		MLSP	% of An.	
		3.0	3.5	4.0	4.5	5.0		2 yr. Shr. st. cm		
		—	2100	2400	2700	3000		ME	m	0
		—	2000	2300	2600	2900				-1
		1900	2200	2500	2800	3100				+1
		Ustic	Ustic	Ustic	Udic	Udic		SMR		
		Mesic	Mesic	Frigid	Frigid	Cryic		STR		

2	3	4	5	6	7	8	Descriptors	
							LSC	
							Edaphic climax	
	Aridic Haplust.	Typic Haplust.	Typic Eutrobo.	Eutric Glossob.	Typic Cryobor.		Soil	
	—	Pied (Juos) (Jumo) Artr2	Pipo Quga	Abco Psmeg Pipo Quga	Pien Ablas Potr5		Vegetation	0
	—	(Juos) (Jumo) Artr2	Pipo Pied (Juos) (Jumo) Quga Artr2	Psmeg Pipo Quga	Pien Ablas Abco Psmeg			-1
	Artr2 Bogr2	Pied (Juos) (Juos) (Jumo) Quga Artr2	Pipo Quga	Abco Psmeg	Pien Ablas			+1
							Canopy cover %	
	—	40/20 2/15	85/15 10/10	85/20 15/3	95/15 4/0		Trees/shrubs Forbs/graminoids	0
	—	10/25 2/45	55/10 3/5	75/20 20/2	90/10 15/0			-1
	0/30 2/55	50/15 3/5	70/15 15/5	90/15 15/1	95/15 3/0			+1
							Slopes 0-40%	
							Soil depth >50 cm	
	0.5	2	4	3	3		Base of canopy m	
	—	45	75	90	95		Litter %	0
	—	15	60	85	95			-1
	0	55	85	95	95			+1
	—	30	10	0	0		Bare Soil %	0
	—	50	20	0	0			-1
	50	25	0	0	0			+1

1	2	3	4	5	6	7	8	Descriptors		
								LSC		
		—	25	15	10	5		Vegetation (BA) %		0
		—	35	20	15	5				-1
		50	20	15	5	5				+1
		—	700	500	400	100		Herbaceous/woody	lb/ac/yr	0
		—	650	800	750	300				-1
		600	750	700	350	100				+1
		—	200	250	150	50		Forage	lb/ac/yr	0
		—	250	175	200	75				-1
		300	175	200	100	25				+1
		—	1200	2500	3500	3000		Forage Maximum	lb/ac/yr	0
		—	700	2000	3200	4000				-1
		600	1600	3000	3800	2800				+1
				Pipo/70	Abco/70 Psmeg/70 Pipo/65	Pien/75		Species/SI		0
			Pipo/55		Pien/70 Abco/65 Psmeg/65					-1
										+1
			Pied (Juos) (Jumo)					Species		0
			8					Volume cd/ac		
			(Juos) (Jumo)	Pied (Juos) (Jumo) (Jusc2)				Species		-1
			2	4				Volume cd/ac		
			Pied (Juos) (Jumo) (Jusc2)					Species		+1
			14					Volume cd/ac		

1	2	3	4	5	6	7	8	Descriptors		
								LSC		
								Slopes 40-80%		
								Soil depth >50 cm		
		0.5	2	4	3	3		Base of canopy m		
		—	35	65	85	95		Litter %		0
		—	15	55	80	95				-1
		0	45	75	90	95				+1
		—	45	25	10	0		Bare Soil %		0
		—	55	30	10	0				-1
		60	40	15	5	0				+1
		—	20	10	5	5		Vegetation (BA) %		0
		—	30	15	10	5				-1
		40	15	10	5	5				+1
		—	650	450	300	100		Herbaceous/woody	lb/ac/yr	0
		—	600	750	350	200				-1
		550	700	400	250	175				+1
		—	175	200	50	25		Forage	lb/ac/yr	0
		—	225	125	75	25				-1
		250	150	100	25	25				+1
		—	1125	2300	3300	2800		Forage Maximum	lb/ac/yr	0
		—	650	1800	2800	3500				-1
		550	1500	2500	3300	3000				+1
				Pipo/65	Abco/65 Psmeg/65 Pipo/60	Pien/70		Species/SI		0
				Pipo/50	Psmeg/60 Pipo/60	Pien/65 Abco/60 Psmeg/60				-1
				Pipo/70	Psmeg/65 Abco/65	Pien/70				+1
			Pied (Juos) (Jumo)					Species		0
			7					Volume cd/ac		
			(Juos) (Jumo)	Pied (Jumo) (Juos) (Jusc2)				Species		-1
			2	4				Volume cd/ac		

(INTENTIONALLY BLANK)

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Glossary of Soils Terms

The following definitions are included for the information of users of this report who are unfamiliar with contemporary soil classification. They provide only the essence of the meanings of the classification. Complete classification criteria are found in Soil Taxonomy, A Basic System of Soil Classification For Making and Interpreting Soil Surveys, Soil Survey Staff, SCS, USDA (Wasington, D.C.; December, 1975).

-alf	For Alfisol--light-colored, but relatively fertile, well-developed soils found where soil moisture is available for plant uptake more than 3 months during the growing season.
Aridic	A subgroup modifier; in this case, it defines a soil in the ustic moisture regime which is somewhat drier than is typical, but not quite as dry as an Aridisol.
argi	For argillic--presence of clay in subsoils due to downward transport of water through the soil--a well-developed subsoil.
association	A group of soils which occur in a regular or predictable pattern within the same mapping unit.
-bor-	From boreal--soil temperatures are relatively cold; for example, "frigid", or colder, than mesic".
calcareous	A soil which contains free calcium carbonate throughout the soil profile.
clayey-skeletal	Subsoil is high in both clay and rock.
complex	A group of soils within the same mapping unit which occur in a random or unpredictable pattern.
deep	40+ inches
-ept-	A soil which has developed enough to have an altered horizon, but which has no illuviated clays; example: an Ustochrept.
-ert	For Vertisol-soils that are high in clay and have deep, wide cracks annually.
eutro-	Relatively fertile.
fine	Subsoil contains over 35% clay.
fine-loamy	Subsoil is relatively high in clay content, but sufficient sand is present to keep it fairly loamy.
Fluventic	A subgroup modifier defining an Ustochrept which has been subject to flooding and soil deposition; literally, "recent flooding".

frigid	Mean annual soil temperature is 32-47°F.
hapl-, haplo-	Simply developed; merely indicates that an Ustalf, Boroll or Ustoll lacks characteristics that could distinguish it as a member of another taxonomic group. For example, if a Boroll lacks a well-developed subsoil, it may be a Haploboroll, rather than an Argiboroll.
lithic	Bedrock contact within 20 inches of the soil surface.
loamy	Subsoil has significant quantities of both sand and clay that are sufficiently balanced to keep it loamy.
loamy-skeletal	Subsoil is low to medium in clay and high in sand--though not high enough to be called sandy. Rock fragments make up a high percentage of the subsoil.
mesic	Mean annual soil temperature is 47-59°F.
moderately deep	20-40 inches.
montmorillonitic	Montmorillonite is the dominant clay mineral in the subsoil.
-ochr	"Pale"; in this case, a light colored Inceptisol. An Ustochrept.
-oll	For Mollisol--dark colored, fertile soils.
-orth-	"Same"; refers to a soil with undeveloped sub-horizons.
Pachic	A soil surface darkened by organic matter to depths that are greater than is thought typical.
shallow	Less than 20 inches.
thermic	Mean annual soil temperature is 59-72°F.
Typic	Represents the central concept of a soil within the category indicated by the taxonomic name following the term "typic". For example, Lithic Haplustalfs are not typical of the central concept of Haplustalfs because they are too shallow (lithic).
Udic	Soil is not dry as long as 90 days in most years. Moisture is not a limiting factor to plants during the growing season in most years.
-ust-	From ustic--while mositure is limited, it is present at a time when conditions are suitable for plant growth. Soil is dry for more than 90 consecutive days in most years. Example: Ustochrept.
Ustalfic	Subgroup modifier for a Haplargid which is technically an Aridisol, but demonstrates characteristics similar to an

Alfisol in the ustic moisture regime; a slightly more moist Haplargid.

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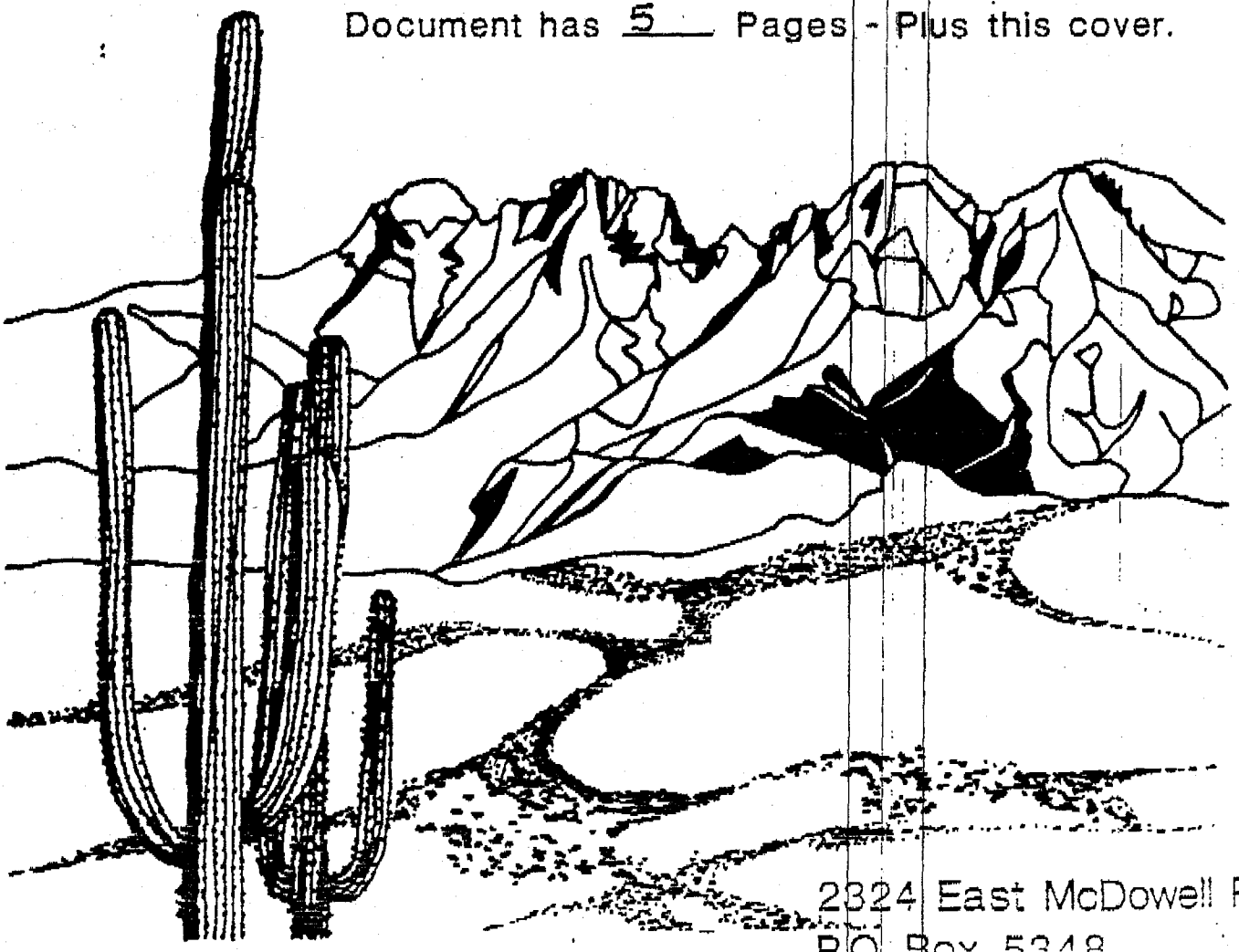

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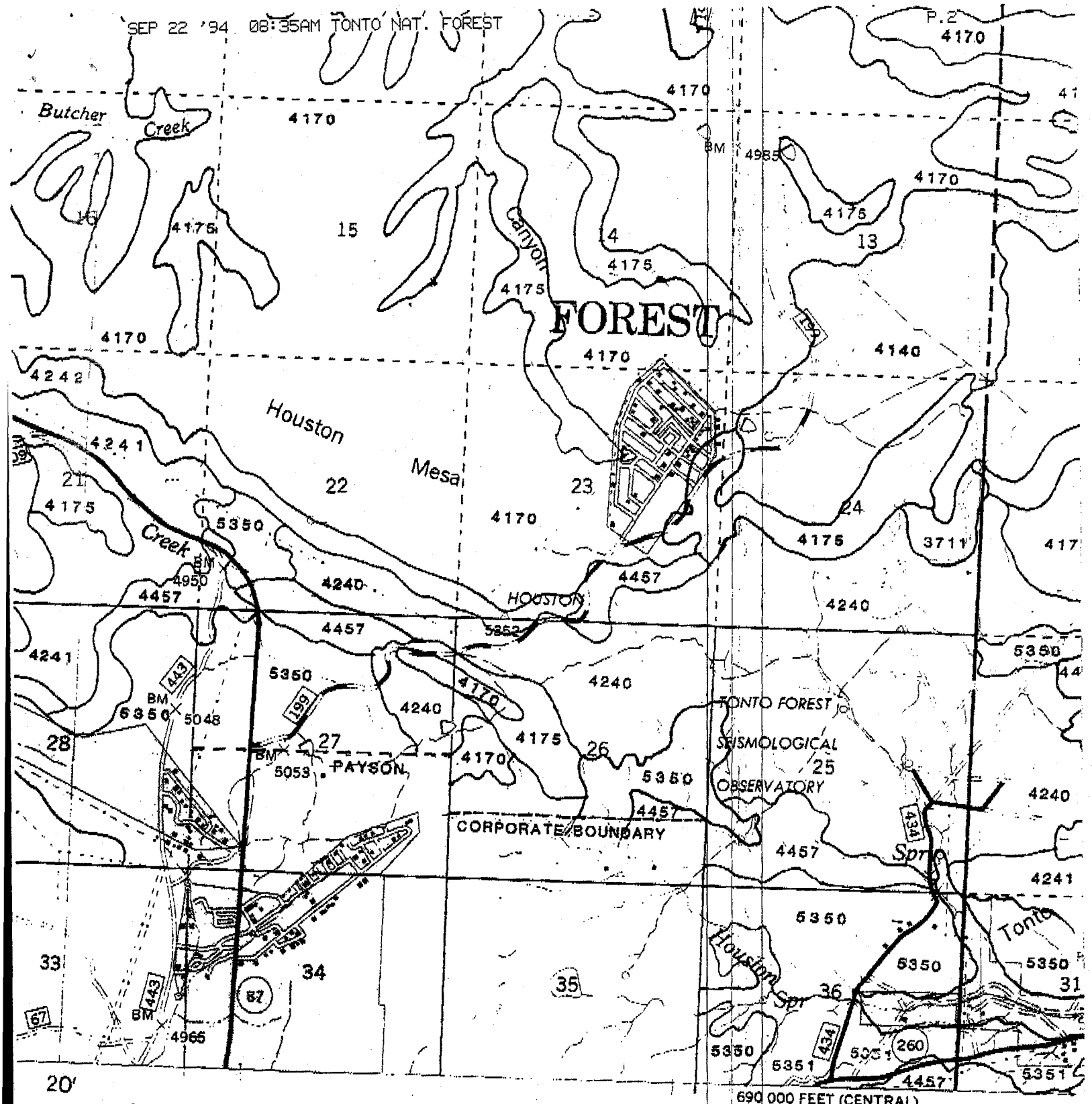


TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, location reliable
- Surveyed, location unreliable
- Unsurveyed, protraction by B.L.M. 1960

NORTH TONTO TERRESTRIAL ECOSYSTEMS

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
4140	Typic Haplustalfs, --- fine, mont., mesic	deep gravelly loam ---	LSM 4 +1	Bogr2/Jude2	Zoo-topo-edaphic	0-15 Complex	17492	2.0	123
	Vertic Haplustalfs, --- fine, mont., mesic	deep gravelly clay loam	LSM 4 +1	Paob/Bogr2/ Jude2	Zoo-topo-edapic				
4161	Typic Haplustalfs, --- fine, mont., mesic	mod. deep very grav. loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Outu2/Arpu5	Edaphic	15-40	4035	.5	125
4170	Typic Haplustalfs, --- fine, mixed, mesic	--- gravelly loam ---	LSM 4 +1	Pimo/Jude2/ Juos	Topo-edaphic	0-15	16747	1.9	127
4175	Typic Haplustalfs, --- clayey-skeletal,mixed, mesic	--- very cobbly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Outu2/Arpu5	Edaphic	15-40	11704	1.3	129
4176	Typic Haplustalfs, --- clayey-skeletal,mixed, mesic	--- ext. cobbly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Outu2/Arpu5	Edaphic	40-80	12499	1.4	131
4240	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	deep gravelly sandy loam gullied	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Outu2/Arpu5	Edaphic	0-15	6552	.8	133
4241	Typic Haplustalfs, --- loamy-skeletal, mixed, mesic	--- gravelly sandy loam ---	LSM 4 +1	Quem/Jude2/ Arpu5	Fire	15-40 Complex	10634	1.2	135
	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 +1	Quem/Jude2/ Arpu5	Fire				

Table 1: Legend, Acreage, Proportionate Extent And Index Of The Map Units

Map Symbol	Map Unit Name Soil Taxonomic	Phase	Climate Class	Vegetation Taxonomic	Climax Class	Slope % Kind of Map Unit	Acres	Pct.	Page
4242	Lithic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 0	Quem/Qutu2/ Arpu5	Fire-edaphic	40-80 Complex	27219	3.1	137
	Typic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- v. gravelly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic				
4451	Typic Haplustalfs, --- fine,mixed, mesic	mod. deep very cobbly loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	0-15	3784	.4	139
	Udic Haplustalfs, --- fine,mixed, mesic	mod. deep gravelly loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5 Arpr	Edaphic				
4457	Typic Ustochrepts, --- loamy-skeletal, mixed, mesic	mod. deep v. gravelly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Qutu2/Arpu5	Edaphic	15-40 Complex	17551	2.0	141
	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 +1	Pimo/Jude2/ Juos/Quar/ Arpu5	Edaphic				
4468	Lithic Ustochrepts, --- loamy-skeletal, mixed, mesic	--- v. gravelly sandy loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire	15-40 Complex	4142	.5	143
	Typic Haplustalfs, --- clayey-skeletal, mixed, mesic	mod. deep gravelly loam ---	LSM 4 0	Cugl/Pimo/ Qutu2/Arpu5	Topo-fire				
5252	Udic Haplustalfs, --- fine, mixed, mesic	deep very cobbly ~~clay~~ loam ---	LSM 5 0	Pipo/Jude2/ Quar/Arpu5/ Arpr	Edaphic	40-80	4988	.6	169
5350	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	0-15	3037	.4	171
5351	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam ---	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/ Arpr	Edaphic	15-40	3604	.4	173
5352	Udic Ustochrepts, --- loamy-skeletal,mixed, mesic	--- gravelly sandy loam	LSM 5 -1	Pipo/Pimo/ Jude2/Quar/ Qutu2/Arpu5/	Edaphic	40-80	15476	1.8	175

DOES NOT MATCH MUD

MU 5350 - UDIC USTOCHREPT -

1-0	Inches	Oak + Pine Litter	
0-3	Inches	Gravelly	SL
3-10	Inches	Gravelly	SL
10-23	Inches	Very Grav.	SL
23-35	Inches	Very Grav	SL
35	Inches	Granite B.R.	

GROUP - B

MU 4457 - Lithic Ustochrept -

0-1	Inches	Extremely Gravelly	Loam
1-7	"	Very Gravelly	Loam
7-10	"	extremely Gravelly	Loam
10	"	GRANITE BedRock	

GROU. C

- Typic Ustochrept -

1-3	Inches	Very Gravelly	SL
3-9	"	Gravelly	Clay Loam
9-20	"	extremely Gravelly	clay Loam
20-26	"	extremely gravelly	Sandy loam
26+	- Granite Bedrock -		

GROUP - C

MU 4240 - Typic Ustochrept -

0-2	Inches	Gravelly	SL
2-7	"	Very Gravelly	SL
7-14	Inches	extremely gravelly	LS
14-30	"	extremely gravelly	LS
30	"	Granite Bed Rock	

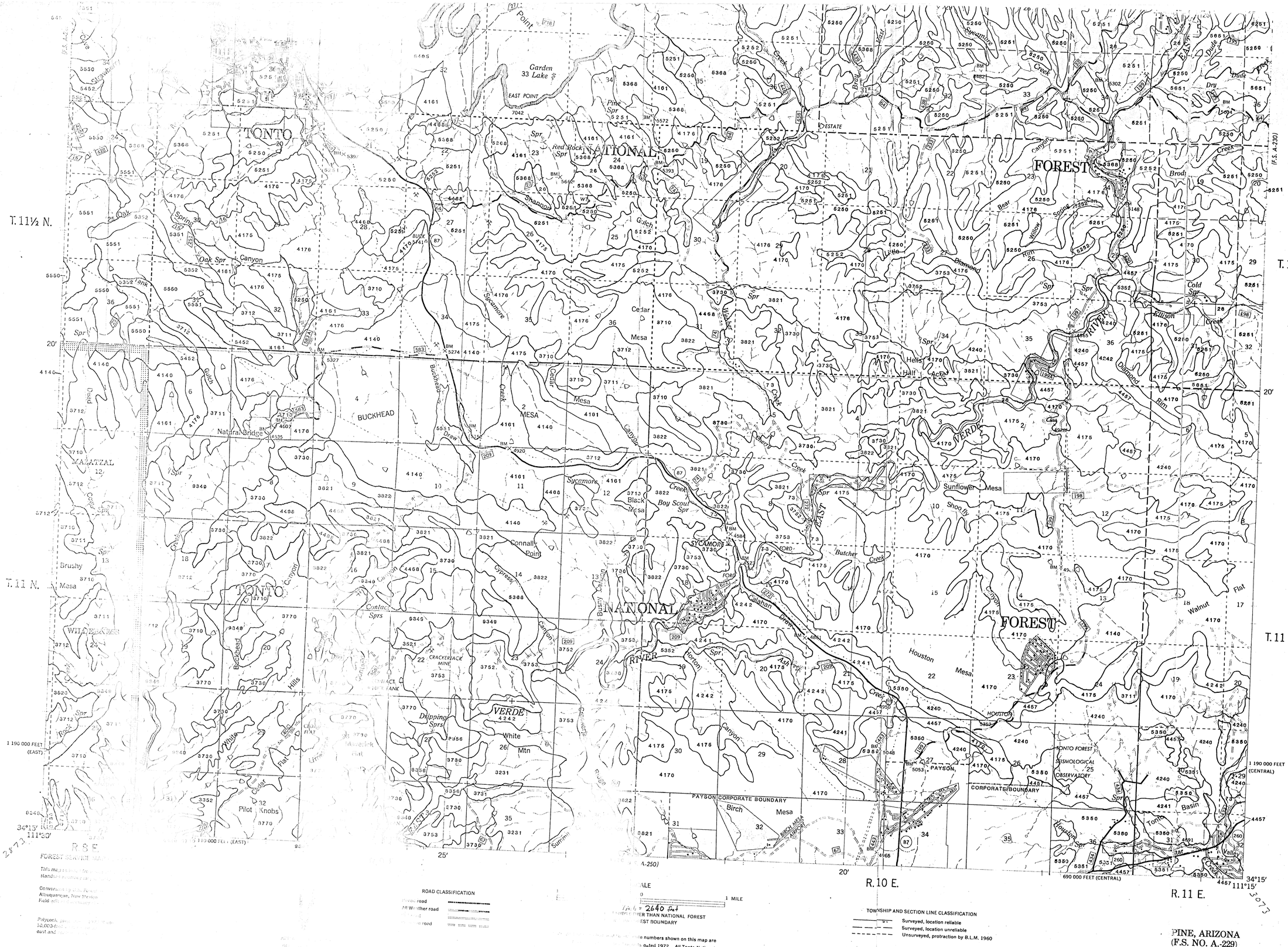
GROUP - B

M.U 4170 — Typic Haplustalf —

0 - 3	Very Gravelly Loam	GROUP - C
3 - 15	Clay loam	
15 - 23	Clay loam	
23 - 31	Clay	
31 - 40	Clay loam	

MU 4175 — Typic Haplustalf -

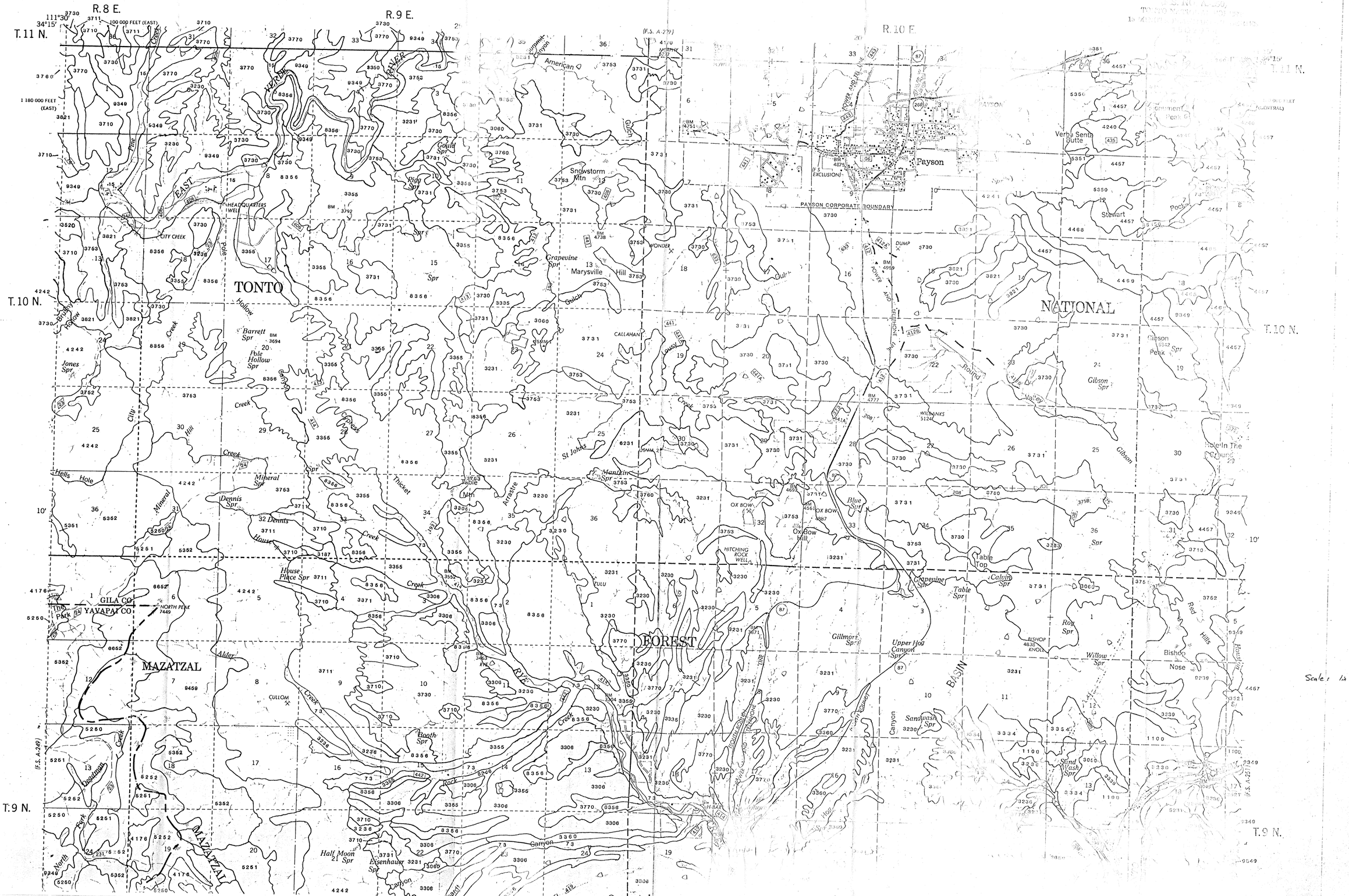
0 - 2	extremely gravelly SL	GROUP - C
2 - 9	Gravelly Sandy Clay Loam	
9 - 40 inches	Gravelly Clay.	



PINE, ARIZONA
(F.S. NO. A-229)
N3415-W11115/15
1972

NORTH TONTO TERRESTRIAL ECOSYSTEMS SURVEY

1985 UPDATE

J. KELSEY

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