

Appendix Q

Soils Specialist Report

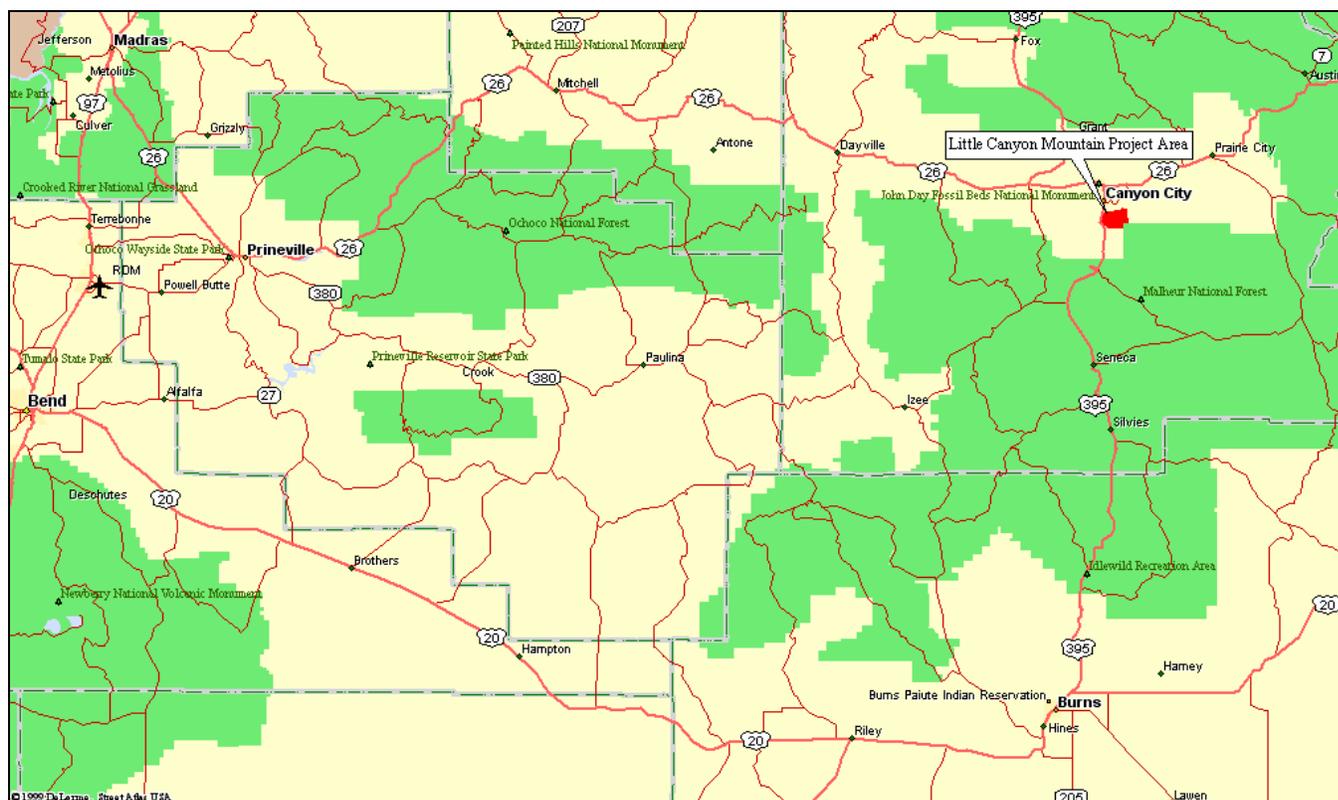
Resource: Soils

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I. Purpose and Need

Refer to Section one of the EA for a detailed description of the Proposed Action and Purpose and Need for this project.

Map 1 General Project Location



II. Past Management Actions

The Proposed John Day Resource Management Plan and Final Environmental Impact Statement, 1984 on page 12, identified soil objectives to “maintain or increase soil productivity and to minimize erosion”. That will be the focus for this soils report in the Little Canyon Mountain (LCM) treatment area.

Field work for the Grant County, Oregon Central Part soil survey was completed in 1960-1975. This survey reflects the conditions in the survey area in 1975 and covered about 437,134 acres of the Central portion of Grant County, Oregon. Little Canyon Mountain (2,498 acres) is a part of this survey area and covers about 0.6 percent this area. Soil maps, legends, tables, and interpretations for LCM can be found in the soils attachment.

About 50 percent (1,227 acres of roaded area) of the (LCM) area has been impacted in the past from road building, placer and hydraulic mining, logging, and recreational uses. Recreational motorized use has impacted the area creating rutted, natural surface off-road trails. The hydraulic and placer mining activities have occurred in the alluvial drainages and alluvial fans mostly in the northeast part of the area (about 206 acres).

Fires have recently occurred on the south side of the project area. This fire appeared to be of moderate intensity and appears to have re-vegetated with grasses. Salvage logging and some thinning have occurred with this fire. The existing road network and a cable or helicopter logging operation was used; the landings were piled, burned, tilled and re-planted with trees. Observed soil disturbance was minimal for this operation. Another burn occurring to the east and outside of the LCM area burned hotter and was a stand replacement. This area was replanted with ponderosa pine. No grass seeding occurred.

Most recently, an under story pre-commercial stand thinning operation was completed adjoining private land. Shrubs and small trees were cut and hand piled. Soil compaction was not a concern with this activity. The hand piles will be burned later this winter and can be expected to impact the soil as an intense burn under the piles.

III. Existing Environment

Ninety percent of the soil types in the Little Canyon Mountain area have developed on hill and mountain slopes with a mean slope of 44 percent. The remaining ten percent, mostly in the north eastern part of the project area, have formed on low relief, alluvial fans and fan terraces with a mean slope of 14 percent.

Common soil types found on hill and mountain slopes are Ruddley, McGarr, Lemonex, and Alding. These soils have formed in residual and colluvial parent materials from shist, gneiss, diorite, serpentine and olivinite bed rock. These soils are well drained, 12 to 40 inches deep to bedrock, are loamy and clayey textured with 10 to 65 percent gravel and cobble sized rock fragments occurring through out the profile. Soil types found on the alluvial fans are Simas, Tub, and Oxwall. These soils have formed in fanglomerate parent materials, are well drained, greater than 60 inches deep to bedrock, and are mostly clayey textured with 15 to 50 percent gravel and cobble sized rock fragments throughout the profile. Soil pans can occur on the more stable parts of this landscape. Rock outcrop and shallow soils - Alding, Anatone and Licksillet are generally found on ridges and shoulder slopes. Rock outcrop can also be found on the steeper parts (greater than 85 percent slope) of the landscape.

Serpentine is a bedrock type found occasionally in the project area. Serpentine soils may contain high amounts of magnesium, chromium, cobalt, nickel or iron. These soils may also have low amounts of nitrogen, phosphorus, potassium and molybdenum. Productivity for Douglas-fir in these soil types is poor. The serpentine areas of Little Canyon Mountain do not seem to be affecting production, possibly because they are small in extent, the proportion of Douglas fir is low compared to Ponderosa pine, and the soil depths over the serpentine are mostly greater than 20 inches. All of the soils in this project area have dark surface horizons with 2 to 5 percent organic matter content. Soil biologic crusts of lichens and mosses are well developed mostly on the dryer bare slopes

Geologically unstable parent materials, that would produce large mass movements, have not been observed in this project area. This is due in part to the dryer climate, shallow soil depths to bedrock and geologic strike and dip planes being perpendicular with existing slopes. Areas with slopes greater than 70 percent tend to form bedrock cliff faces with colluvial talus slopes below. Dry ravel especially on south aspects could limit survivability of young trees planted on these slopes. Slight soil creep has been noted on deep, north to northeast facing slopes of 70 percent or more. White volcanic ash deposits can occasionally be found along the major alluvial drainages of the project area.

IV. Environmental Effects of No Action

Presently, in-unit soil erosion is not a concern for the project area. However, erosion from non maintained natural surfaced roads and trails is a concern in the project area (about 23 miles). The direct effects of the existing road system in the LCM area are that it will continue to provide unrestricted paths for concentrated water flow and erosion. There are no erosion control measures installed at this time. Soil disturbance and compaction can be expected to increase due to increased ATV use. The old mining ditches have not been kept up. Water has been diverted into these ditches and where breaches have occurred, concentrated water flow has caused gullies. Existing water diversions also have the same problem when they are not maintained. In some cases, these ditches provide water for creating spots for recreational mud running.

Road access to existing mining claims that presently do not have roads built to them can be expected to increase in the future. Soil displacement from surface mining disturbances can directly affect the loss of topsoil, organic matter and soil nutrients. Indirect effects of soil displacement are decreased fertility for establishing a protective plant cover and increased weed infestations.

Past hydraulic mining activities have disturbed and caused soil displacement on about 206 acres of the LCM project area (less than 1 percent of the project area). Trees and shrubs are slowly re-vegetating these disturbed areas, grass cover is sparse. The direct affect is a destruction of plant cover, loss of top soil, reduced soil productivity, redistribution of sediment, and disruption of the natural stream course. Indirect affects are creation of steep slopes and cuts for ATV's to play on, and places to dump garbage into.

Due to an ongoing 4 year drought, the existing trees of LCM especially the high density stands are under stress. Beetle and insect damage to these trees is increasing rapidly. Direct affects of

beetle kill stands are they kill trees and provide fuel for wildfire starts. The indirect affects is to produce a greater risk for intense stand replacing wild fires. Intense wild fires generally have a negative impact on the soil resource. Loss of protective cover increases the risk of erosion and sedimentation to streams (see Table 1). Loss of organic matter and volatilization of soil nutrients due to high soil temperatures could also occur (see discussion of intense burns).

Erosion and sedimentation from the existing road network in the project area will continue to grow. Disturbance from existing mining activity will continue to occur. ATV use can be expected to expand, increasing soil compaction, erosion and rutting on ATV trails. The probability of intense wildfire will continue to increase due to high stand density and increased number of beetle kill trees. With the increased risk of wild fire comes the increased risk of loss of soil productivity. Juniper canopy will continue to increase reducing the shrub and grass under story, increasing the erosion potential.

V. Comparison of Alternatives

(B) BMBP

The BMBP alternative creates a 1000 foot fuel buffer with restrictions. Road, trail and ditch impacts are similar to the no-action alternative above. High rates of erosion and impact from ATV's can be expected from this alternative. Slash burning impacts to soils will be very high in this alternative. There are 116,078 trees or 515 trees per acre, far and above the greatest amount of slash of all the alternatives. Soil impacts with slash pile burning are similar to those under intense wild fires. Most of the treatment area for this alternative is in the dryer lower elevations zone that has a greatest susceptibility to weed infestations. Medusa head spread would be a concern under this alternative with the high slash pile burn disturbance. Ground based logging disturbance will be slight in this alternative (lowest of all the alternatives) as there will be no heavy equipment use. The treatment area for this alternative is the lowest of all the alternatives other than the No-action. The average basal area post treatment for this area ranges from 20.1 to 140.1. This does not meet the recommended basal area post-treatment recommendations to reduce crown fire potential (40-60 BAF). This alternative does not target dead and dying beetle killed trees or does it treat areas without roads or areas on slopes greater that 30 percent. This all combined increases the possibility of intense wildfire for this alternative. This alternative limits subsoiling as a means to mitigate compacted soils (see discussion under compacted soils). Limiting treatments due to unstable soils does not need to occur with this alternative as soil mass movement potential for the proposed treatment was not observed.

(C) Historic

The Historic alternative tries to emulate the conditions which existed back in the late 1800's. These conditions are open for speculation but were thought to have developed through less intense more frequent fire burn intervals. The historic pictures show a more open tree stand on the upper slopes probably mixed ponderosa pine and Douglas fir. On the lower slopes there were scattered Ponderosa pine and Douglas fir with a high shrub cover possibly mountain mahogany, service berry, rose. Juniper was present but in minor amounts. This alternative has the highest treatment area for ground based logging and thus the highest potential for soil surface

impacts (soil compaction). Juniper and old decadent mountain mahogany are targeted for this alternative. This will increase the shrub and grass amounts in areas with high encroaching juniper and improve water infiltration and reduce surface erosion. The slash treatment came out to 6.3 trees per acre but would be increased with the extra mahogany. Hand pile burn impacts would be moderately high and would be similar to the Uniform and Stratified alternatives. Burn impacts (bare soil surfaces) at elevations below 4,300 ft could have a greater potential for weed and medusa head invasion. Improvements to roads, trails and old ditches are not planned for this alternative so these conditions would be similar to the no action (high for erosion and sedimentation). The elimination of slash and down wood from hand pile burns and the subsequent prescribed burn entries within the natural fire interval cycle of 7 to 25 years could open up the area and promote increased ATV traffic over areas presently not used by ATV's.

(D) Uniform

This alternative was developed in response to the need presented in the Central Oregon Fire Management Services' Fire Management Plan (2002) to reduce fuel loads on Little Canyon Mountain as part of the Wildland-Urban Interface zone surrounding Canyon City. This alternative meets the reduction in crown fire potential best of all the alternatives. The intense burn probability is low for this alternative. This alternative addresses road impacts to the main traffic route on the mountain and realigns the part of the road within the riparian buffer. The main haul road will be surfaced and rocked with coarse rock fragments. Road closures would also be proposed for this alternative to eliminate vehicle traffic crossing through riparian areas and eliminate erosion from cutoff spur roads intersecting the main haul road. Hand pile impact concerns are similar to the historic and graded alternatives. Juniper and mahogany are not targeted for this alternative so the potential for increased juniper invasion exists. The same concern exists in this alternative for increased ATV traffic with the elimination of slash and downed wood. The area of ground based logging is slightly less for this alternative compared to the historic and graded alternatives.

(E) Graded

This alternative proposes treating the entire project area with a graded basal target decreasing in 4 bands based on elevation as you go up the hill. The potential for ground based disturbance is similar to the historic alternative. The historic and graded alternatives have the highest acreage of ground base harvest area of all the alternatives. The intense burn probability is moderately low and is similar to the Stratified and historic alternative. Dead and dying trees will be targeted which should reduce further the intense burn probability. Erosion and sedimentation from roads, trails, and ditches is moderately high for this alternative. The main haul road will be surfaced and armored with coarse rock to control rutting, puddling, and erosion. No cutoff roads will be closed and no erosion control practices will be installed on any other of the natural surfaced roads. This alternative will not reroute the main haul road out of the riparian as proposed in the Uniform alternative. Hand pile burn impacts are high for this alternative. This alternative produces about twice the slash as the historic uniform or stratified alternatives. Level 1 (bottom of the slope band) will have 3.2 trees per acre slash production, Level 2 is 16.5 trees per acre, Level 3 is 47.3 trees per acre, and level 4 is 15 trees per acre. For what ever reason the numbers were twice as high as was expected with layer 3. This could be due to the plots that were

selected to average the data. As with the other alternatives hand pile burning the slash will create a severe burn disturbance under the slash and could open up the area and promote increased ATV traffic over areas presently not used by ATV's. This alternative targets mountain mahogany, cutting the old decadent plants and scarifying 26 acres of the soil surface to provide a seedbed for young mahogany regeneration. Scarifying could increase the erosion potential on the bare surfaced areas that are not covered or mulched. Weeds could also invade these areas if the mahogany does not regenerate rapidly.

(F) Stratified

This alternative was developed in response to concerns over post-treatment stand diversity and is a variation of the graded and historic alternatives. Treatments would be designated based on stand type (species composition, density, aspect, elevation). Stand types are: juniper dominated, ponderosa pine dominated, mixed ponderosa pine Douglas fir dominated, and Douglas fir dominated. The ground based logging impacts for this alternative are the lower than either the Historic, Uniform, or Graded alternatives but are higher than the No-action or the BMBP alternatives. The intense burn probability after treatment would be similar to the Historic and Graded alternatives, moderately low. Dead and dying trees would be targeted along with thinning decadent mountain mahogany, both of which would help decrease further the intense burn probability. Thinning juniper would improve the grass and shrub component of the under story and would help improve water infiltration into the soil. No road improvements, road closures or erosion control practices are planned for this alternative. Therefore, erosion and sedimentation from roads, trails, and ditches is high, similar to the No-action, BMBP, and Historic alternatives. Hand pile burn impacts would be moderately high, similar to the Historic and Uniform alternatives, lower than the BMBP and Graded alternatives and higher than the No-action alternative. The hand pile impacts could be slightly higher than the Historic alternative due to the increased amounts of thinned mahogany proposed for this alternative. As with the other alternatives hand pile burning the slash will create a severe burn disturbance under the slash and could open up the area and promote increased ATV traffic over areas presently not used by ATV's thus increasing existing road and trail erosion.

VI. Environmental Effects of Management Alternatives

Compaction

This includes compaction from in unit skid trails and ATV trails. Direct effects of soil compaction on the soil resource are decreased pore space, reduced aeration and permeability, destruction of plant cover, destruction of soil biotic crust. Indirect effects are increased surface water flow, increased erosion and sedimentation, rutting, rilling, reduced plant growth, reduction of organic matter production, and loss of diversity in the soil food web. Ectomycorrhizal fungi are strongly aerobic so soil compaction can negatively affect these organisms. Also, diversity of soil biotic organisms including fungi is decreased with soil compaction. Subsoiling can have a direct negative effect on fungi trying to grow in a compacted soil but more likely it will be positive in the long run due to the aeration produced. Compaction effects can last in surface and subsoil layers for an indefinite amount of time without mitigation. Subsoiling is one method of

reducing impacts to compacted soils. Scattering slash and debris on the soil surface could discourage wide spread ATV use and reduce potential soil disturbance.

Intense Burns

Intense burns include severe burn wildfires and in-unit burns of hand piles and log landings. Hand pile diameters are around 12 feet. The number of piles and surface disturbance is directly related to the amount of slash produced. Direct effects of intense burns on the soil resource are; decreased permeability due to change in soil structure and hydrophobicity; increased ash particle content from the burn which could plug soil macropores adding to increased water runoff; loss of protective plant cover and loss of soil biotic crust which protect the soil surface from erosion; volatilization of soil nutrients mostly carbon, nitrogen, sulfur and phosphorus resulting in fertility loss; decreased in soil roughness due to the destruction of vegetative material and root mass; and increased number of flow paths for water and soil movement. Protective plant cover can be expected to regenerate in 2 to 5 years depending on the burn severity and proximity to seed sources. Loss of hydrophobicity is variable. In some cases the hydrophobic effects have dissipated in a 1 year and in other cases the effects can remain for 10 years or more. Soil biotic crusts especially the cyanobacteria regenerate first, mosses and lichens take longer. Estimated regeneration time is 2 to 30 years. Soil types in the little canyon mountain area are expected to weather fire effects from moderate (116-520 btu's/sec/ft) fire line intensities (PP 82 soil attachment, Dyksterhuis, 1981).

Erosion from Intense Burns

Water Erosion Prediction Project (WEPP) Runs for Little Canyon Mountain have shown the following for an intense burn on slopes ranging from 10 to 50 percent with a 50 foot slope length, loam surface texture, with a 5 percent vegetative or surface cover, and 20 percent rock fragments within the soil. This is modeling erosion for a Ruddley loam - mapunit 38E. A maximum allowable ton per acre soil loss for a Ruddley loam is 2 tons per acre per year (pp 49 Soil Attachment, Dyksterhuis, E. L., 1981). From the table below it can be seen that a 3 year climate event return interval exceeds this amount.

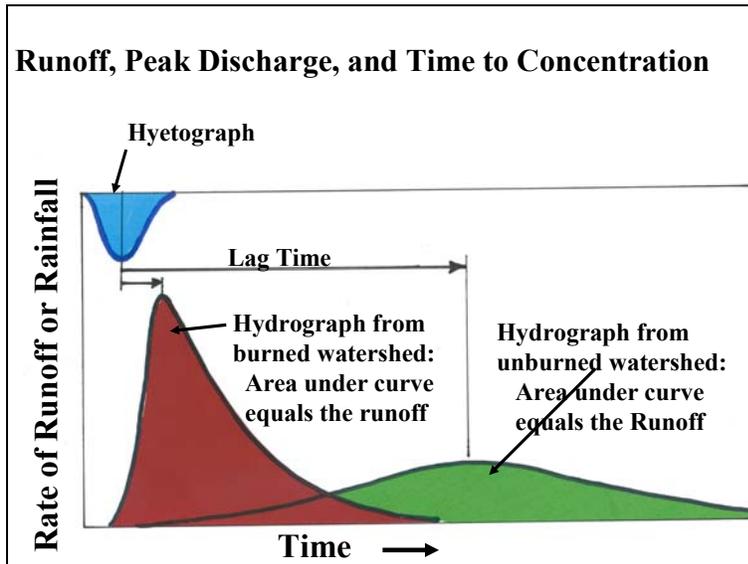
Table 1 WEPP Erosion Run for an intense wildfire burn on a Ruddley loam – LCM map unit 38E

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac⁻¹)	Sediment (t ac⁻¹)
30 year	30.81	2.02	10.06	10.06
15 year	23.8	1.95	8.15	8.14
6 year	20.89	1.07	4.48	4.48
3 year	19.01	0.96	2.79	2.79
1.5 year	17.76	0.35	0.69	0.58
Average	18.79	0.69	2.31	2.31

The combined indirect effects of soil compaction and intense soil surface burn at 100 to 200 degrees C with hydrophobic effects are increased runoff rate and decreased lag time during a precipitation event to the stream system (see Figure 1). This can produce 80 percent of the

erosion and sediment input to the stream (Martin & Moody, 2002) and results in a loss of water quality and possible increase in down stream flooding. This erosion and loss of water quality and flooding hazard could continue as long as the upland slopes remain bare and smooth, approximately 2 to 5 years.

Figure 1 Debora Martin and John Moody, 2002, Burned Area Emergency Rehabilitation Conference, Reno, NV



Possible Design Criteria to reduce impacts to soil productivity and reduce soil erosion:

- Reduce early spring vehicle traffic (close roads) when the ground is wet, soil strength is low and rutting hazard is high.
- Improve or re-route rutted and puddled portions of the Main Traffic Haul Route in the Project area.
- Designate main traffic routes for mining access, timber haul route access, and local home access. Close subsoil, and water bar and tank-trap cutoff roads and other roads that are causing erosion. Look at roads within riparian buffers for possible improvements or decommissioning. Look at roads and trail going straight up the slope for erosion control and water baring treatments.
- Lop and scatter pole slash on the ground from thinning operation to reduce the number of hand piles and the area burn effects on the soil from hand pile burning. A slash rate of about 1/4 to 3/4 pound per square foot was recommended for forest health in ponderosa pine stands (Chap 7 pp 138-139 - DeBano and others, 1998), and to help limit ATV and vehicle traffic in non-roaded areas.
- Limit construction of new roads in the project area to those that would reduce cumulatively, the effects of rutting, soil compaction, and soil disturbance hazards.
- Reduce the chance of intense wildfire, which could damage the existing tree, grass and shrub components, reduce soil nutrient levels, and increase the chance of intense erosion events and flooding.

- Thin tree stands including invading juniper stands to open the stand to increase amount of grass and shrub cover in under story and to improve health and vigor of existing trees to better cope with the existing drought conditions since 1999.
- For ground based yarding, if ground is not frozen with a snow cover, designate main arterials trails (over 3 passes [out and back on the same trail = 1 pass]) to landings or use a recording GPS in the skidder to identify skidder paths. Subsoil skid trails used more than 3 times, and plant with native trees, shrubs, and grasses. It is not recommended to skid when the ground is wet. In order of preference: (1) Helicopter logging compaction not a concern. (2) Frozen ground with 6 inch plus snow cover = no pass limitations. (3) Dry ground - 3 pass limit, monitor and check for compaction effects. (4). Moist ground – track or designate paths. 3 pass limit then subsoil. (4) Wet ground – do not skid
- Keep soil disturbance impacts to less than 20 percent, using Forest Service guides. Currently the roads in the 500 ft roaded buffer used in the BMBP alternative, make up a 4 percent impact of that area (road length ft x 12 feet width). To keep within the 20 percent guides above, keep 3 pass skid trail impacts to distances of 100 ft apart or greater from each other.
- For scarification in the mountain mahogany treatments, pock the ground (small divots or depressions that are not connected). This will prevent soil erosion and to concentrate seed and moisture into the depressions for better germination.

Table 2 Summary of possible treatment impacts to the soil resource by Alternative

Soil Resource Impacts	Alternatives					
	(A) No-Action	(B) BMBP	(C) Historic	(D) Uniform	(E) Graded	(F) Stratified
Potential Soil disturbance from ground based logging (based on acres of <35 percent slopes)	Low 0 Acres	Low 0 acres	High 716 ac	Mod High 701 ac	High 787 ac	Mod High 619 ac
Intense Burn Probability (based on area treated and BAF amounts)	High	Mod High	Mod Low	Low	Mod Low	Mod Low
Erosion and Sedimentation from roads, trails, ditches (based on road treatments)	High	High	High	Moderate	Mod High	High
Hand Pile Burn Impacts (based on slash generated) 1/	Low 0 Slash Trees 0 tr/ac	Very High 116,078 Slash Trees 515 tr/ac	Mod High 13,302 Slash Trees 6.3 tr/ac	Mod High 17,456 Slash Trees 8.3 tr/ac	High 35,088 Slash Trees 15.9 tr/ac	Mod High 17,720 Slash Trees 9.5 tr/ac

1/ Slash tree numbers were generated from averages of selected data plots and may not be representative of the total treatment area.

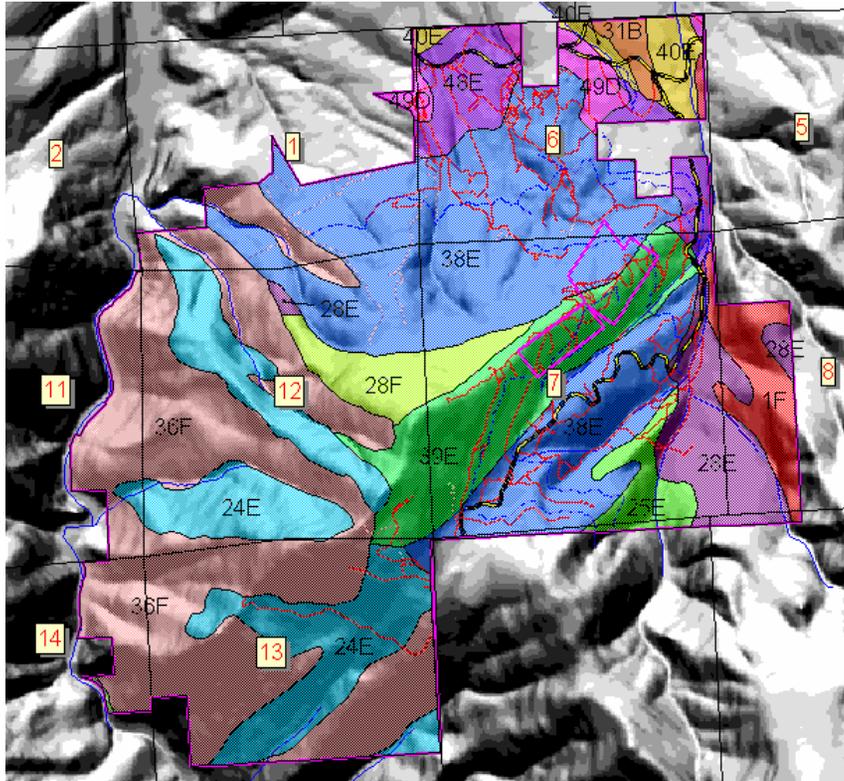
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Soil Attachment

Little Canyon Mountain Soil Conditions

Map 2 Little Canyon Mountain Soil Map units from Grant County Central Portion Soil Survey, USDA, NRCS, 1987



Map Unit Symbol	LCM Acres	Grant Soil Survey Acres	% LCM Map Unit in Grant Survey	Map Unit Name
1F	74	4012	2	Alding-rock outcrop complex, 30 to 70 percent slopes
24E	354	2409	15	Lemonex stony clay loam, 10 to 45 percent slopes
25E	51	9521	1	Lemonex-rock outcrop complex, 3 to 45 percent slopes
28E	133	14098	1	Mcgarr stony loam, 5 to 45 percent slopes
28F	78	2764	3	Mcgarr stony loam, 45 to 75 percent slopes
31B	20	15007	0	Oxwall very stony silty clay loam, 2 to 7 percent slopes
36F	706	3056	23	Rock outcrop-lemonex complex, 30 to 75 percent slopes
38E	709	1615	44	Ruddley loam, 5 to 40 percent slopes
39E	225	4675	5	Ruddley-rock outcrop complex, 5 to 40 percent slopes
40E	48	23701	0	Simas clay loam, 8 to 30 percent south slopes
48E	107	10283	1	Tub clay loam, 20 to 40 percent north slopes
49D	42	4792	1	Tub stony clay loam, 3 to 20 percent slopes
54E	4	1425	0	Venator very shaly loam, 5 to 40 percent slopes

Table 3 Summary of Soil Properties for Little Canyon Mountain Project Area from Grant County, Oregon, Central Part Soil Survey, 1981.

Musym	Mapunit	Geology	Depth - Average	Slope Range	Slope - Average	Aspect	Surface Texture	Subsoil Texture	Soil Drainage	Hydric Percent
1F	Alding grv-cl -RO	olivinite	14	30 to 70	48	south	Loamy	Clayey	wd	0
24E	Lemonex st-cl	shist, gneiss, diorite	28	10 to 45	29		Loamy	Clayey	wd	0
25E	Lemonex stv-cl -RO	olivinite	21	3 to 45	26		Loamy	Clayey	wd	0
28E	Mcgarr st-l	olivinite	31	5 to 45	25		Loamy	Loamy	wd	0
28F	Mcgarr st-l	shist, gneiss, diorite	30	45 to 75	59	north	Loamy	Loamy	wd	0
31B	Oxwall stv-sicl	fanglomerate	22	2 to 7	5		Loamy	Clayey	wd	0
36F	Ro-Lemonex stv-cl	shist, gneiss, diorite	16	30 to 75	52	south	Loamy	Clayey	wd	0
38E	Ruddley l	shist, gneiss, diorite & serpentine	24	5 to 40	24		Loamy	Loamy	wd	0

Musym	Mapunit	Geology	Depth - Average	Slope Range	Slope - Average	Aspect	Surface Texture	Subsoil Texture	Soil Drainage	Hydric Percent
39E	Ruddley l-ro	shist, gneiss, diorite & serpentine	18	5 to 40	23		Loamy	Loamy	wd	0
40E	Simas cl	fanglomerate	60	8 to 30	20		Loamy	Clayey	wd	0
48E	Tub cl	fanglomerate	60	20 to 40	29	north	Loamy	Clayey	wd	0
49D	Tub cl	fanglomerate	60	3 to 20	12		Loamy	Clayey	wd	1
54E	Venator v shaley l	olivinite	14	5 to 40	23		Loamy	Loamy	wd	0

Table 4 Interpretations from Grant County, Oregon, Central Part Soil Survey, 1981. (See pp 81-85 for rating criteria)

Mapunit	Fire Damage Hazard 3/ pp 82	Erosion Hazard – Bare Surface	Erosion Hazard - Off Road 1/ pp 81	Erosion Hazard – Road/Trail 2/ pp 82	Potential Seedling Mortality 4/pp 84	Road Suitability natural surface 5/ pp84	Soil Rutting Hazard 6/ pp 85
1F	Low	High	Severe	Severe	Low	Poorly	Slight
24E	Low	moderate to high	Moderate	Severe	Low	Poorly	Severe
25E	Low	moderate to high	Moderate	Moderate	Low	Moderately	Moderate
28E	Low	moderate to high	Moderate	Severe	Low	Poorly	Severe
28F	Low	High	Very Severe	Severe	Low	Poorly	Severe
31B	Mod	Slight	Slight	Moderate	Low	Moderately	Moderate
36F	Low	High	Very Severe	Severe	Low	Poorly	Moderate
38E	Low	moderate to severe	Moderate	Severe	Low	Moderately	Severe
39E	Low	moderate to high	Moderate	Severe	Low	Moderately	Severe
40E	Low	moderate to high	Moderate	Severe	Low	Moderately	Severe
48E	Low	moderate to high	Moderate	Severe	Low	Poorly	Severe
49D	Low	slight to moderate	Slight	Severe	Low	Moderately	Severe
54E	Low	moderate to high	Moderate	Severe	Low	Moderately	Slight

The following tables are from the Grant County Central Part Soil Survey completed in 1981 and extracted from the National Soil Information System on 9/20/2002. These reports contain only the mapunits found in the Little Canyon Mountain Project Area.

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Table C2. - Rangeland Productivity and Characteristic Plant Communities

Grant County, Oregon, Central Part

Only the soils that support rangeland vegetation suitable for grazing are rated.

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland Composition
		Favorable Year	Normal Year	Unfavorable		Pct
		Lb/Acre	Lb/Acre	Lb/Acre		
1F:						
Alding	---	---	---	---	---	---
Rock Outcrop	---	---	---	---	---	---
Lithic Xerochrepts	---	---	---	---	---	---
Soils 20-40"	---	---	---	---	---	---
Ruddley	---	---	---	---	---	---
24E:						
Lemonex	---	---	---	---	---	---
Alding	---	---	---	---	---	---
Hankins	---	---	---	---	---	---
Ruddley	---	---	---	---	---	---
25E:						
Lemonex	---	---	---	---	---	---
Rock Outcrop	---	---	---	---	---	---
Lithic Xerochrepts	---	---	---	---	---	---
Alding	---	---	---	---	---	---
Hankins	---	---	---	---	---	---
28E:						

Table C2. - Rangeland Productivity and Characteristic Plant Communities - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland
		Favorable	Normal	Unfavorable		Composition
		Year	Year			Pct
		Lb/Acre	Lb/Acre	Lb/Acre		
28E:						
Mcgarr	---	---	---	---	---	---
Anatone	---	1,300	900	500	Idaho Fescue Bluebunch Wheatgrass	70 25
Hankins	---	---	---	---	---	---
Top	---	---	---	---	---	---
Rock Outcrop	---	---	---	---	---	---
28F:						
Mcgarr	---	---	---	---	---	---
Anatone	---	---	---	---	---	---
Mcgarr 6-10" Ash Surf	---	---	---	---	---	---
Top	---	---	---	---	---	---
Rock Outcrop	---	---	---	---	---	---
31B:						
Oxwall	---	900	500	300	Idaho Fescue Bluebunch Wheatgrass	65 30
Oxbow	---	1,200	700	400	Idaho Fescue Bluebunch Wheatgrass	70 15
Tub	Jd Clayey 12-16pz	1,600	1,200	800	Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush	50 30 5
36F:						

Table C2. - Rangeland Productivity and Characteristic Plant Communities - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland
		Favorable Year	Normal Year	Unfavorable		Composition
		Lb/Acre	Lb/Acre	Lb/Acre		Pct
36F:						
Rock Outcrop	---	---	---	---	---	---
Lemonex	---	---	---	---	---	---
Lithic Xerochrepts	---	---	---	---	---	---
Alding	---	---	---	---	---	---
Lemonex 40-60"	---	---	---	---	---	---
38E:						
Ruddley Loam	---	---	---	---	---	---
Hankins	---	---	---	---	---	---
Lemonex	---	---	---	---	---	---
Alding	---	---	---	---	---	---
39E:						
Ruddley	---	---	---	---	---	---
Rock Outcrop	---	---	---	---	---	---
Lithic Xerochrepts	---	---	---	---	---	---
Clay Soil 12-20"	---	---	---	---	---	---
Ruddley 20-40"	---	---	---	---	---	---
40E:						

Table C2. - Rangeland Productivity and Characteristic Plant Communities - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland
		Favorable	Normal	Unfavorable		Composition
		Year	Year			Pct
		Lb/Acre	Lb/Acre	Lb/Acre		
40E: Simas	---	900	700	500	Bluebunch Wheatgrass Sandberg Bluegrass Antelope Bitterbrush Western Juniper Wyoming Big Sagebrush	65 10 5 5 5
Day	---	1,100	1,000	800	Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush Sandberg Bluegrass Western Juniper	60 10 5 5 5
Lickskillet	---	1,200	800	600	Bluebunch Wheatgrass Thurber Needlegrass Sandberg Bluegrass Western Juniper	60 15 5 5
Tub	Jd Clayey 12-16pz	1,600	1,200	800	Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush	50 30 5
Simas Stv	---	900	700	500	Bluebunch Wheatgrass Sandberg Bluegrass Antelope Bitterbrush Western Juniper Wyoming Big Sagebrush	65 10 5 5 5
48E: Tub	Jd North 12-16pz	1,800	1,400	1,000	Idaho Fescue Bluebunch Wheatgrass Sandberg Bluegrass	70 10 5

Table C2. - Rangeland Productivity and Characteristic Plant Communities - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland
		Favorable	Normal	Unfavorable		Composition
		Year	Year			Pct
		Lb/Acre	Lb/Acre	Lb/Acre		
48E: Simas	---	900	700	500	Bluebunch Wheatgrass Sandberg Bluegrass Antelope Bitterbrush Western Juniper Wyoming Big Sagebrush	65 10 5 5 5
Clay Soil 20-40"	---	---	---	---	---	---
49D: Tub	Jd Clayey 12-16pz	1,600	1,200	800	Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush	50 30 5
Clay Soil 20-40"	---	---	---	---	---	---
Simas	---	900	700	500	Bluebunch Wheatgrass Sandberg Bluegrass Antelope Bitterbrush Western Juniper Wyoming Big Sagebrush	65 10 5 5 5
Tub	Jd Clayey 12-16pz	1,600	1,200	800	Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush	50 30 5
Wet Spots	---	---	---	---	---	---
54E:						

Table C2. - Rangeland Productivity and Characteristic Plant Communities - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Ecological Site	Total Dry-Weight Production			Characteristic Vegetation	Rangeland
		Favorable	Normal	Unfavorable		Composition
		Year	Year			Pct
		Lb/Acre	Lb/Acre	Lb/Acre		
54E: Venator	---	1,700	1,300	1,000	Bluebunch Wheatgrass Antelope Bitterbrush Idaho Fescue Indian Ricegrass Basin Wildrye	40 15 15 10 5
Gwin	---	1,200	800	600	Bluebunch Wheatgrass Thurber Needlegrass Sandberg Bluegrass Western Juniper	60 15 5 5
Logdell	---	1,300	900	600	Curleaf Mountain Mahogany Bluebunch Wheatgrass Idaho Fescue Antelope Bitterbrush Thurber Needlegrass Western Juniper	40 30 15 10 5 5
Rock Outcrop	---	---	---	---	---	--

Distribution Generation Date: 9/20/2002

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Table E1. - Forest Productivity

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Potential Productivity			Trees to Manage
	Common Trees	Site Index	Volume of Wood Fiber Cu Ft/Acre	
1F:				
Alding	Ponderosa Pine	63	43	Ponderosa Pine
Rock Outcrop	---	---	---	---
Lithic Xerochrepts	---	---	---	---
Soils 20-40"	---	---	---	---
Ruddley	Ponderosa Pine	---	---	Ponderosa Pine
24E:				
Lemonex	Douglas Fir Ponderosa Pine	---	---	Douglas Fir Ponderosa Pine
Alding	Ponderosa Pine	63	43	Ponderosa Pine
Hankins	Douglas Fir Ponderosa Pine	---	---	Douglas Fir Ponderosa Pine
		72	57	
Ruddley	Ponderosa Pine	---	---	Ponderosa Pine
25E:				
Lemonex	Ponderosa Pine	---	---	Ponderosa Pine
Rock Outcrop	---	---	---	---
Lithic Xerochrepts	---	---	---	---
Alding	Ponderosa Pine	63	43	Ponderosa Pine
Hankins	Douglas Fir Ponderosa Pine	---	---	Douglas Fir Ponderosa Pine
		72	57	
28E:				
Mcgarr	Douglas Fir Ponderosa Pine	---	---	Douglas Fir Ponderosa Pine
		67	57	
Anatone	---	---	---	---
Hankins	Douglas Fir Ponderosa Pine	---	---	Douglas Fir Ponderosa Pine
		72	57	
Top	Douglas Fir Grand Fir Ponderosa Pine	82 86 111	86 129 129	Douglas Fir Grand Fir Ponderosa Pine
Rock Outcrop	---	---	---	---
28F:				

Table E1. - Forest Productivity - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Potential Productivity			Trees to Manage
	Common Trees	Site Index	Volume of Wood Fiber Cu Ft/Acre	
28F: Mcgarr	Douglas Fir Ponderosa Pine	--- 67	--- 57	Douglas Fir Ponderosa Pine
Anatone	Ponderosa Pine	63	43	Ponderosa Pine
Mcgarr 6-10" Ash Surf	Douglas Fir Ponderosa Pine	--- 67	--- 57	Douglas Fir Ponderosa Pine
Top	Douglas Fir Grand Fir Ponderosa Pine	82 86 111	86 129 129	Douglas Fir Grand Fir Ponderosa Pine
Rock Outcrop	---	---	---	---
31B: Oxwall	---	---	---	---
Oxbow	---	---	---	---
Tub	---	---	---	---
36F: Rock Outcrop	---	---	---	---
Lemonex	Ponderosa Pine	---	---	Ponderosa Pine
Lithic Xerochrepts	---	---	---	---
Alding	Ponderosa Pine	63	43	Ponderosa Pine
Lemonex 40-60"	Ponderosa Pine	---	---	Ponderosa Pine
38E: Ruddley Loam	Ponderosa Pine	---	---	Ponderosa Pine
Hankins	Douglas Fir Ponderosa Pine	--- 72	--- 57	Douglas Fir Ponderosa Pine
Lemonex	Ponderosa Pine	---	---	Ponderosa Pine
Alding	Ponderosa Pine	63	43	Ponderosa Pine
39E: Ruddley	Ponderosa Pine	---	---	Ponderosa Pine
Rock Outcrop	---	---	---	---
Lithic Xerochrepts	---	---	---	---

Table E1. - Forest Productivity - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Potential Productivity			Trees to Manage
	Common Trees	Site Index	Volume of Wood Fiber Cu Ft/Acre	
39E: Clay Soil 12-20"	---	---	---	---
Ruddley 20-40"	Ponderosa Pine	---	---	Ponderosa Pine
40E: Simas	---	---	---	---
Day	---	---	---	---
Licksillet	---	---	---	---
Tub	---	---	---	---
Simas Stv	---	---	---	---
48E: Tub	---	---	---	---
Simas	---	---	---	---
Clay Soil 20-40"	---	---	---	---
49D: Tub	---	---	---	---
Clay Soil 20-40"	---	---	---	---
Simas	---	---	---	---
Tub	---	---	---	---
Wet Spots	---	---	---	---
54E: Venator	---	---	---	---
Gwin	---	---	---	---
Logdell	---	---	---	---
Rock Outcrop	---	---	---	---

Table H. - Engineering Index Properties

Grant County, Oregon, Central Part

Absence of an entry indicates that the data were not estimated.

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10 Inches Pct	3-10 Inches Pct	4	10	40	200		
			1F: Alding	0-10	Gravelly Loam	GM ML SM	A-2 A-4	0	0-5	60-80		
	10-16	Gravelly Clay	CH GC SC	A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	Variable	---	---	---	---	---	---	---	---	---	---
	8-12	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Soils 20-40"	---				---	---	---	---	---	---	---	---
Ruddley	0-8	Loam	ML	A-4	0	0	85-100	85-100	75-95	50-75	25-35	NP-10
	8-18	Gravelly Clay Loam Clay Loam	CL GC SC	A-6 A-7	0	0	60-85	55-85	50-85	40-65	35-45	15-20
	18-28	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
24E: Lemonex	0-8	Stony Clay Loam	CL	A-7	15-30	0-10	90-100	80-100	70-95	60-80	40-45	15-20
	8-27	Gravelly Clay	CH CL	A-7	0	0-15	65-90	60-75	55-70	50-65	45-65	25-35
	27-37	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
					Pct	Pct						
24E: Alding	0-10	Gravelly Loam	GM ML SM	A-2 A-4	0	0-5	60-80	50-70	40-70	30-65	30-35	5-10
	10-16	Gravelly Clay	CH GC SC	A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Hankins	0-10	Silt Loam	ML	A-4 A-6	0	0-5	90-100	85-100	85-100	70-90	30-40	5-15
	10-60	Silty Clay Loam Clay Clay Loam	CH	A-7	0	0-15	90-100	85-100	85-100	65-95	50-65	25-35
Ruddley	0-8	Loam	ML	A-4	0	0	85-100	85-100	75-95	50-75	25-35	NP-10
	8-18	Gravelly Clay Loam Clay Loam	CL GC SC	A-6 A-7	0	0	60-85	55-85	50-85	40-65	35-45	15-20
	18-28	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
25E: Lemonex	0-8	Very Stony Clay Loam	CL	A-7	30-55	0-15	75-95	70-90	65-85	60-80	40-45	15-20
	8-27	Gravelly Clay	CH CL	A-7	0	0-15	65-90	60-75	55-70	50-65	45-65	25-35
	27-37	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	
Lithic Xerochrepts	0-8	Variable	---	---	---	---	---	---	---	---	---	---
	8-12	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
25E: Alding	0-10	Gravelly Loam	GM ML SM	A-2 A-4	0	0-5	60-80	50-70	40-70	30-65	30-35	5-10
	10-16	Gravelly Clay	CH GC SC	A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Hankins	0-10	Silt Loam	ML	A-4 A-6	0	0-5	90-100	85-100	85-100	70-90	30-40	5-15
	10-60	Silty Clay Loam Clay Clay Loam	CH	A-7	0	0-15	90-100	85-100	85-100	65-95	50-65	25-35
28E: Mcgarr	0-14	Stony Loam	ML	A-4	10-25	0-10	80-100	75-95	65-90	50-75	30-40	NP-10
	14-31	Clay Loam Cobbly Silty Clay Loam Cobbly Clay Loam	CL	A-6	0	10-30	80-100	65-90	60-90	55-85	30-40	10-20
	31-35	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Anatone	0-3	Extremely Stony Loam	GM	A-2 A-4	25-40	20-35	50-70	40-60	35-55	25-50	25-35	NP-10
	3-11	Extremely Cobbly Loam Very Gravelly Silt Loam Very Cobbly Loam	GM ML	A-1 A-2 A-4	0-2	20-70	40-70	35-55	25-55	20-55	25-35	NP-10
	11-15	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Hankins	0-10	Silt Loam	ML	A-4 A-6	0	0-5	90-100	85-100	85-100	70-90	30-40	5-15
	10-60	Clay Clay Loam Silty Clay Loam	CH	A-7	0	0-15	90-100	85-100	85-100	65-95	50-65	25-35

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Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
28E:					Pct	Pct						
Top	0-5	Silt Loam	ML	A-4	0	0	100	100	90-100	80-90	30-35	5-10
	5-36	Silty Clay Loam Silty Clay Clay	CL	A-7	0	0-5	95-100	90-100	85-100	75-95	40-50	15-25
	36-45	Clay Loam Silty Clay Loam	CL ML	A-6 A-7	0-5	0-10	70-100	65-100	60-100	50-80	35-50	10-25
	45-55	Cobbly Silty Clay Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
28F:												
Mcgarr	0-14	Stony Loam	ML	A-4	10-25	0-10	80-100	75-95	65-90	50-75	30-40	NP-10
	14-31	Clay Loam Cobbly Clay Loam Cobbly Silty Clay Loam	CL	A-6	0	10-30	80-100	65-90	60-90	55-85	30-40	10-20
	31-35	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Anatone	0-10	Gravelly Loam	GM ML	A-2 A-4	0	0-5	60-80	50-70	40-70	30-65	30-35	5-10
	10-16	Gravelly Clay	SM CH GC SC	A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Mcgarr 6-10" Ash Surf	0-14	Stony Loam	ML	A-4	10-25	0-10	80-100	75-95	65-90	50-75	30-40	NP-10
	14-31	Cobbly Clay Loam Cobbly Silty Clay Loam Clay Loam	CL	A-6	0	10-30	80-100	65-90	60-90	55-85	30-40	10-20
	31-35	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---

Distribution Generation Date: 9/20/2002

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Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
28F:					Pct	Pct						
Top	0-5	Silt Loam	ML	A-4	0	0	100	100	90-100	80-90	30-35	5-10
	5-36	Silty Clay Loam Clay Silty Clay	CL	A-7	0	0-5	95-100	90-100	85-100	75-95	40-50	15-25
	36-45	Cobbly Silty Clay Silty Clay Loam Clay Loam	CL ML	A-6 A-7	0-5	0-10	70-100	65-100	60-100	50-80	35-50	10-25
	45-55	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
31B:												
Oxwall	0-2	Very Stony Silty Clay Loam	CL	A-6	30-65	0-15	75-95	70-90	65-90	60-80	35-40	15-20
	2-8	Gravelly Silty Clay Loam	CL	A-6	0	0-10	70-90	60-75	55-70	50-65	35-40	15-20
	8-13	Gravelly Clay Clay	CH	A-7	0	0-10	70-100	55-95	50-90	50-85	50-65	25-40
	13-23	Indurated	---	---	---	---	---	---	---	---	---	---
Oxbow	0-12	Very Stony Silty Clay Loam	CL	A-7	30-65	0-15	80-100	75-100	70-100	65-95	40-50	15-25
	12-27	Gravelly Clay Cobbly Clay Clay	CH	A-7	0	5-25	75-100	70-100	65-100	50-95	55-70	30-40
	27-37	Indurated	---	---	---	---	---	---	---	---	---	---
Tub	0-8	Stony Clay Loam	CL	A-6 A-7	0-15	5-30	80-95	70-85	65-80	50-80	35-45	15-25
	8-23	Clay Cobbly Clay	CH CL	A-7	0	0-25	80-95	60-95	55-90	50-85	45-65	25-45
	23-60	Gravelly Clay Cobbly Loam Silty Clay Loam Gravelly Clay Loam	CL SC	A-6 A-7	0	0-25	80-95	60-95	55-90	40-85	35-45	15-25

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Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
In				Pct	Pct					Pct		
31B:												
36F: Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
Lemonex	0-8	Very Stony Clay Loam	CL	A-7	30-55	0-15	75-95	70-90	65-85	60-80	40-45	15-20
	8-27	Gravelly Clay	CH	A-7	0	0-15	65-90	60-75	55-70	50-65	45-65	25-35
			CL									
	27-37	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	Variable	---	---	---	---	---	---	---	---	---	---
	8-12	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Alding	0-10	Gravelly Loam	GM ML SM	A-2 A-4	0	0-5	60-80	50-70	40-70	30-65	30-35	5-10
	10-16	Gravelly Clay	CH GC SC	A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Lemonex 40-60"	0-8	Very Stony Clay Loam	CL	A-7	30-55	0-15	75-95	70-90	65-85	60-80	40-45	15-20
	8-27	Gravelly Clay	CH	A-7	0	0-15	65-90	60-75	55-70	50-65	45-65	25-35
			CL									
	27-37	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
38E: Ruddley Loam	0-8	Loam	ML	A-4	0	0	85-100	85-100	75-95	50-75	25-35	NP-10
	8-18	Clay Loam Gravelly Clay Loam	CL GC SC	A-6 A-7	0	0	60-85	55-85	50-85	40-65	35-45	15-20
	18-28	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10 Inches Pct	3-10 Inches Pct	4	10	40	200		
38E: Hankins	0-10	Silty Clay Loam	ML	A-4	0	0-5	90-100	85-100	85-100	70-95	30-40	5-15
	10-60	Clay Loam Clay Silty Clay Loam	CH	A-6 A-7	0	0-15	90-100	85-100	85-100	65-95	50-65	25-35
Lemonex	0-8	Very Stony Clay Loam	CL	A-7	30-55	0-15	75-95	70-90	65-85	60-80	40-45	15-20
	8-27	Gravelly Clay	CH	A-7	0	0-15	65-90	60-75	55-70	50-65	45-65	25-35
	27-37	Unweathered Bedrock	CL									
Alding	0-10	Gravelly Loam	GM	A-2	0	0-5	60-80	50-70	40-70	30-65	30-35	5-10
	10-16	Gravelly Clay	ML SM CH GC SC	A-4 A-7	0	0-5	60-75	50-70	45-70	40-65	50-65	30-40
	16-20	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
39E: Ruddley	0-8	Loam	ML	A-4	0	0	85-100	85-100	75-95	50-75	25-35	NP-10
	8-18	Gravelly Clay Loam Clay Loam	CL GC SC	A-6 A-7	0	0	60-85	55-85	50-85	40-65	35-45	15-20
	18-28	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	Variable	---	---	---	---	---	---	---	---	---	---
	8-12	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Clay Soil 12-20"	---				---	---	---	---	---	---	---	---

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Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
39E:					Pct	Pct						
Ruddley 20-40"	0-8	Loam	ML	A-4	0	0	85-100	85-100	75-95	50-75	25-35	NP-10
	8-18	Gravelly Clay Loam Clay Loam	CL GC SC	A-6 A-7	0	0	60-85	55-85	50-85	40-65	35-45	15-20
	18-28	Weathered Bedrock	---	---	---	---	---	---	---	---	---	---
40E:												
Simas	0-5	Clay Loam	CL ML	A-6 A-7	0-5	0-5	85-100	75-100	70-95	55-75	35-45	10-20
	5-21	Cobbly Clay Gravelly Clay Clay	CH	A-7	0	0-45	75-95	55-95	50-90	50-85	55-70	30-45
	21-60	Gravelly Clay Loam Cobbly Clay Gravelly Clay	CH CL GC SC	A-7	0	0-30	60-90	50-80	50-80	40-75	40-55	15-30
Day	0-10	Clay	CL	A-6 A-7	0	0	75-100	75-100	65-100	60-95	35-50	15-25
	10-43	Clay	CH	A-7	0	0	75-100	75-100	65-100	60-95	50-70	20-40
Lickskillet	0-8	Extremely Stony Loam	GM ML SM	A-4	15-25	15-25	60-90	60-85	50-80	35-65	30-35	5-10
	8-15	Very Gravelly Clay Loam Very Gravelly Loam Very Cobbly Loam	GC GM	A-2 A-6 A-7	0-5	15-50	40-65	35-50	25-50	20-40	35-45	10-20
	15-19	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
40E: Tub	0-8	Stony Clay Loam	CL	A-6 A-7	0-15	5-30	80-95	70-85	65-80	50-80	35-45	15-25
	8-23	Cobbly Clay Gravelly Clay Clay	CH CL	A-7	0	0-25	80-95	60-95	55-90	50-85	45-65	25-45
	23-60	Silty Clay Loam Gravelly Clay Loam Cobbly Loam	CL SC	A-6 A-7	0	0-25	80-95	60-95	55-90	40-85	35-45	15-25
Simas Stv	0-5	Very Stony Clay Loam	CL ML SC SM	A-6 A-7	15-30	5-25	70-95	60-90	60-90	45-70	35-45	10-20
	5-21	Cobbly Clay Gravelly Clay Clay	CH	A-7	0	0-45	75-95	55-95	50-90	50-85	55-70	30-45
	21-60	Gravelly Clay Cobbly Clay Very Cobbly Clay Loam	CH CL GC SC	A-7	0-10	10-40	65-95	55-85	55-80	45-80	40-55	15-30
48E: Tub	0-8	Clay Loam	CL	A-6 A-7	0	0	85-95	75-95	75-95	55-75	35-45	15-25
	8-23	Cobbly Clay Gravelly Clay Clay	CH CL	A-7	0	0-25	80-95	60-95	55-90	50-85	45-65	25-45
	23-60	Cobbly Loam Silty Clay Loam Gravelly Clay Loam	CL SC	A-6 A-7	0	0-25	80-95	60-95	55-90	40-85	35-45	15-25

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
48E: Simas	0-5	Very Stony Clay Loam	CL ML SC SM	A-6 A-7	15-30	5-25	70-95	60-90	60-90	45-70	35-45	10-20
	5-21	Cobbly Clay Gravelly Clay Clay	CH	A-7	0	0-45	75-95	55-95	50-90	50-85	55-70	30-45
	21-60	Cobbly Clay Gravelly Clay Very Cobbly Clay Loam	CH CL GC SC	A-7	0-10	10-40	65-95	55-85	55-80	45-80	40-55	15-30
Clay Soil 20-40"	---				---	---	---	---	---	---	---	---
49D: Tub	0-8	Stony Clay Loam	CL	A-6 A-7	0-15	5-30	80-95	70-85	65-80	50-80	35-45	15-25
	8-23	Gravelly Clay Clay	CH CL	A-7	0	0-25	80-95	60-95	55-90	50-85	45-65	25-45
	23-60	Cobbly Clay Gravelly Clay Loam Cobbly Loam Silty Clay Loam	CL SC	A-6 A-7	0	0-25	80-95	60-95	55-90	40-85	35-45	15-25
Clay Soil 20-40"	---				---	---	---	---	---	---	---	

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
49D: Simas	0-5	Clay Loam	CL ML	A-6 A-7	0-5	0-5	85-100	75-100	70-95	55-75	35-45	10-20
	5-21	Gravelly Clay Clay	CH	A-7	0	0-45	75-95	55-95	50-90	50-85	55-70	30-45
	21-60	Cobbly Clay	CH CL GC SC	A-7	0	0-30	60-90	50-80	50-80	40-75	40-55	15-30
		Gravelly Clay										
Cobbly Clay												
Gravelly Clay Loam												
Tub	0-8	Stony Clay Loam	CL	A-6 A-7	0-15	5-30	80-95	70-85	65-80	50-80	35-45	15-25
	8-23	Cobbly Clay Gravelly Clay	CH CL	A-7	0	0-25	80-95	60-95	55-90	50-85	45-65	25-45
	23-60	Gravelly Clay Loam Silty Clay Loam Cobbly Loam	CL SC	A-6 A-7	0	0-25	80-95	60-95	55-90	40-85	35-45	15-25
Wet Spots	---				---	---	---	---	---	---	---	---
54E: Venator	0-5	Very Channery Loam	GM	A-1 A-2	0	0	40-55	30-50	25-45	20-30	25-40	NP-10
	5-12	Very Channery Clay Loam	GM GP-GM	A-1 A-2	0	0	25-40	20-35	20-35	10-30	25-40	NP-10
		Very Channery Loam										
		Extremely Channery Clay Loam										
12-16	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---	

Table H. - Engineering Index Properties - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth In	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit Pct	Plasticity Index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
54E: Gwin	0-3	Very Stony Silt Loam	GC-GM GM	A-4	20-40	10-40	55-75	50-70	45-65	35-50	20-30	NP-10
	3-13	Very Cobbly Silty Clay Loam Extremely Gravelly Clay Loam	GC	A-2 A-6	0-10	30-70	40-55	25-50	20-50	20-45	30-40	10-20
	13-17	Extremely Cobbly Silty Clay Loam Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Logdell	0-8	Extremely Channery Loam	GM GP-GM	A-1	0	0-15	30-50	20-30	15-30	10-25	25-35	NP-5
	8-18	Unweathered Bedrock	---	---	---	---	---	---	---	---	---	---
Rock Outcrop	0-60	Bedrock	---	---	---	---	---	---	---	---	---	

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Table J1a. - Physical Properties of the Soils

Grant County, Oregon, Central Part

Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
1F: Alding	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Soils 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ruddley	0-8	---	---	18-27	1.10-1.20	4.00-14.00	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	1.40-4.00	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
24E: Lemonex	0-8	---	---	27-35	1.20-1.30	1.40-4.00	0.11-0.17	3.0-5.9	2.0-3.0	.24	.32	2	7	38
	8-27	---	---	40-50	1.30-1.40	0.42-1.40	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	1.40-4.00	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.42-1.40	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
Ruddley	0-8	---	---	18-27	1.10-1.20	4.00-14.00	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	1.40-4.00	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			

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Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
24E:														
25E:														
Lemonex	0-8	---	---	27-35	1.20-1.30	1.40-4.00	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.42-1.40	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	1.40-4.00	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.42-1.40	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
28E:														
Mcgarr	0-14	---	---	18-27	1.10-1.30	1.40-4.00	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	1.40-4.00	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Anatone	0-3	---	---	10-20	1.20-1.30	4.00-14.00	0.08-0.10	0.0-2.9	2.0-3.0	.10	.49	1	8	0
	3-11	---	---	10-30	1.20-1.30	4.00-14.00	0.09-0.12	0.0-2.9	1.0-2.0	.10	.49			
	11-15	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	1.40-4.00	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.42-1.40	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			

Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
28E: Top	0-5	---	---	18-27	1.10-1.25	4.00-14.00	0.19-0.21	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	5-36	---	---	35-45	1.30-1.45	1.40-4.00	0.15-0.21	6.0-8.9	0.5-1.0	.37	.37			
	36-45	---	---	27-45	1.20-1.40	1.40-4.00	0.11-0.21	3.0-5.9	0.0-0.5	.32	.37			
	45-55	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	---	8	0
28F: Mcgarr	0-14	---	---	18-27	1.10-1.30	1.40-4.00	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	1.40-4.00	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Anatone	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Mcgarr 6-10" Ash Surf	0-14	---	---	18-27	1.10-1.30	1.40-4.00	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	1.40-4.00	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Top	0-5	---	---	18-27	1.10-1.25	4.00-14.00	0.19-0.21	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	5-36	---	---	35-45	1.30-1.45	1.40-4.00	0.15-0.21	6.0-8.9	0.5-1.0	.37	.37			
	36-45	---	---	27-45	1.20-1.40	1.40-4.00	0.11-0.21	3.0-5.9	0.0-0.5	.32	.37			
	45-55	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	---	8	0
31B: Oxwall	0-2	---	---	27-35	1.30-1.45	1.40-4.00	0.10-0.13	3.0-5.9	2.0-3.0	.10	.32	1	8	0
	2-8	---	---	27-35	1.30-1.45	1.40-4.00	0.14-0.17	3.0-5.9	1.0-2.0	.24	.32			
	8-13	---	---	40-60	1.30-1.45	0.42-1.40	0.08-0.14	6.0-8.9	1.0-2.0	.20	.32			
	13-23	---	---	---	---	---	0.00	---	---	---	---			

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Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
31B:														
Oxbow	0-12	---	---	30-40	1.20-1.30	1.40-4.00	0.15-0.20	3.0-5.9	1.0-3.0	.10	.32	2	8	0
	12-27	---	---	40-55	1.20-1.40	0.42-1.40	0.10-0.14	6.0-8.9	0.5-1.0	.20	.28			
	27-37	---	---	---	---	---	0.00	---	---	---	---			
Tub	0-8	---	---	27-40	1.20-1.30	1.40-4.00	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.42-1.40	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	1.40-4.00	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
36F:														
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lemonex	0-8	---	---	27-35	1.20-1.30	1.40-4.00	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.42-1.40	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Lemonex 40-60"	0-8	---	---	27-35	1.20-1.30	1.40-4.00	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.42-1.40	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
38E:														
Ruddley Loam	0-8	---	---	18-27	1.10-1.20	4.00-14.00	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	1.40-4.00	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			

Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
38E: Hankins	0-10	---	---	27-35	1.25-1.35	1.40-4.00	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	7	38
	10-60	---	---	45-60	1.15-1.25	0.42-1.40	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
Lemonex	0-8	---	---	27-35	1.20-1.30	1.40-4.00	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.42-1.40	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	4.00-14.00	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.42-1.40	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
39E: Ruddley	0-8	---	---	18-27	1.10-1.20	4.00-14.00	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	1.40-4.00	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Clay Soil 12-20"	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ruddley 20-40"	0-8	---	---	18-27	1.10-1.20	4.00-14.00	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	1.40-4.00	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
40E: Simas	0-5	---	---	27-40	1.10-1.20	1.40-4.00	0.16-0.19	3.0-5.9	1.0-2.0	.28	.28	3	6	48
	5-21	---	---	50-60	1.20-1.30	0.01-0.42	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.01-0.42	0.09-0.13	6.0-8.9	0.5-1.0	.20	.24			

Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
40E: Day	0-10	---	---	40-45	1.20-1.40	0.01-0.42	0.13-0.16	6.0-8.9	1.0-2.0	.20	.20	5	4	86
	10-43	---	---	60-75	1.20-1.40	0.01-0.42	0.13-0.16	6.0-8.9	0.5-1.0	.17	.17			
Licksillet	0-8	---	---	15-25	1.25-1.35	4.00-14.00	0.08-0.14	0.0-2.9	1.0-2.0	.15	.32	1	8	0
	8-15	---	---	23-33	1.30-1.40	4.00-14.00	0.06-0.14	0.0-2.9	0.5-1.0	.20	.32			
	15-19	---	---	---	---	---	---	---	---	---	---			
Tub	0-8	---	---	27-40	1.20-1.30	1.40-4.00	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.42-1.40	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	1.40-4.00	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Simas Stv	0-5	---	---	27-40	1.10-1.20	1.40-4.00	0.08-0.11	3.0-5.9	1.0-2.0	.17	.28	3	8	0
	5-21	---	---	50-60	1.20-1.30	0.01-0.42	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.01-0.42	0.09-0.13	6.0-8.9	0.5-1.0	.17	.24			
48E: Tub	0-8	---	---	27-40	1.20-1.30	1.40-4.00	0.16-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
	8-23	---	---	40-60	1.30-1.40	0.42-1.40	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	1.40-4.00	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Simas	0-5	---	---	27-40	1.10-1.20	1.40-4.00	0.08-0.11	3.0-5.9	1.0-2.0	.17	.28	3	8	0
	5-21	---	---	50-60	1.20-1.30	0.01-0.42	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.01-0.42	0.09-0.13	6.0-8.9	0.5-1.0	.17	.24			
Clay Soil 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	
49D: Tub	0-8	---	---	27-40	1.20-1.30	1.40-4.00	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.42-1.40	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	1.40-4.00	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Clay Soil 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	

Table J1a. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In		Pct					
49D:														
Simas	0-5	---	---	27-40	1.10-1.20	1.40-4.00	0.16-0.19	3.0-5.9	1.0-2.0	.28	.28	3	6	48
	5-21	---	---	50-60	1.20-1.30	0.01-0.42	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.01-0.42	0.09-0.13	6.0-8.9	0.5-1.0	.20	.24			
Tub	0-8	---	---	27-40	1.20-1.30	1.40-4.00	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.42-1.40	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	1.40-4.00	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Wet Spots	---	---	---	---	---	---	---	---	---	---	---	---	---	---
54E:														
Venator	0-5	---	---	18-25	1.10-1.30	4.00-14.00	0.06-0.10	0.0-2.9	1.0-2.0	.17	.43	1	8	0
	5-12	---	---	18-35	1.20-1.40	4.00-14.00	0.06-0.12	0.0-2.9	0.5-1.0	.17	.49			
	12-16	---	---	---	---	---	---	---	---	---	---			
Gwin	0-3	---	---	10-20	1.20-1.30	4.00-14.00	0.10-0.13	0.0-2.9	2.0-3.0	.15	.37	1	7	38
	3-13	---	---	27-35	1.20-1.40	1.40-4.00	0.07-0.11	0.0-2.9	1.0-2.0	.10	.43			
	13-17	---	---	---	---	---	---	---	---	---	---			
Logdell	0-8	---	---	18-27	1.20-1.30	4.00-14.00	0.06-0.14	0.0-2.9	1.0-2.0	.10	.37	1	8	0
	8-18	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	---	8	0

Table J1b. - Physical Properties of the Soils

Grant County, Oregon, Central Part

Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
1F: Alding	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Soils 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ruddley	0-8	---	---	18-27	1.10-1.20	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	0.2-0.6	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
24E: Lemonex	0-8	---	---	27-35	1.20-1.30	0.2-0.6	0.11-0.17	3.0-5.9	2.0-3.0	.24	.32	2	7	38
	8-27	---	---	40-50	1.30-1.40	0.06-0.2	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	0.2-0.6	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.06-0.2	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
Ruddley	0-8	---	---	18-27	1.10-1.20	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	0.2-0.6	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			

Distribution Generation Date: 9/20/2002

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
24E:														
25E:														
Lemonex	0-8	---	---	27-35	1.20-1.30	0.2-0.6	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.06-0.2	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	0.2-0.6	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.06-0.2	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
28E:														
Mcgarr	0-14	---	---	18-27	1.10-1.30	0.2-0.6	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	0.2-0.6	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Anatone	0-3	---	---	10-20	1.20-1.30	0.6-2	0.08-0.10	0.0-2.9	2.0-3.0	.10	.49	1	8	0
	3-11	---	---	10-30	1.20-1.30	0.6-2	0.09-0.12	0.0-2.9	1.0-2.0	.10	.49			
	11-15	---	---	---	---	---	---	---	---	---	---			
Hankins	0-10	---	---	20-27	1.25-1.35	0.2-0.6	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	6	48
	10-60	---	---	45-60	1.15-1.25	0.06-0.2	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
28E: Top	0-5	---	---	18-27	1.10-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	5-36	---	---	35-45	1.30-1.45	0.2-0.6	0.15-0.21	6.0-8.9	0.5-1.0	.37	.37			
	36-45	---	---	27-45	1.20-1.40	0.2-0.6	0.11-0.21	3.0-5.9	0.0-0.5	.32	.37			
	45-55	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	8	0	
28F: Mcgarr	0-14	---	---	18-27	1.10-1.30	0.2-0.6	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	0.2-0.6	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Anatone	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Mcgarr 6-10" Ash Surf	0-14	---	---	18-27	1.10-1.30	0.2-0.6	0.12-0.16	0.0-2.9	2.0-4.0	.24	.32	2	7	38
	14-31	---	---	27-35	1.20-1.30	0.2-0.6	0.12-0.19	3.0-5.9	0.5-3.0	.28	.37			
	31-35	---	---	---	---	---	---	---	---	---	---			
Top	0-5	---	---	18-27	1.10-1.25	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.32	.32	3	6	48
	5-36	---	---	35-45	1.30-1.45	0.2-0.6	0.15-0.21	6.0-8.9	0.5-1.0	.37	.37			
	36-45	---	---	27-45	1.20-1.40	0.2-0.6	0.11-0.21	3.0-5.9	0.0-0.5	.32	.37			
	45-55	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	8	0	
31B: Oxwall	0-2	---	---	27-35	1.30-1.45	0.2-0.6	0.10-0.13	3.0-5.9	2.0-3.0	.10	.32	1	8	0
	2-8	---	---	27-35	1.30-1.45	0.2-0.6	0.14-0.17	3.0-5.9	1.0-2.0	.24	.32			
	8-13	---	---	40-60	1.30-1.45	0.06-0.2	0.08-0.14	6.0-8.9	1.0-2.0	.20	.32			
	13-23	---	---	---	---	---	0.00	---	---	---	---			

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
31B:														
Oxbow	0-12	---	---	30-40	1.20-1.30	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.10	.32	2	8	0
	12-27	---	---	40-55	1.20-1.40	0.06-0.2	0.10-0.14	6.0-8.9	0.5-1.0	.20	.28			
	27-37	---	---	---	---	---	0.00	---	---	---	---			
Tub	0-8	---	---	27-40	1.20-1.30	0.2-0.6	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.06-0.2	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	0.2-0.6	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
36F:														
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lemonex	0-8	---	---	27-35	1.20-1.30	0.2-0.6	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.06-0.2	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
Lemonex 40-60"	0-8	---	---	27-35	1.20-1.30	0.2-0.6	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.06-0.2	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
38E:														
Ruddley Loam	0-8	---	---	18-27	1.10-1.20	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	0.2-0.6	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
38E: Hankins	0-10	---	---	27-35	1.25-1.35	0.2-0.6	0.11-0.21	3.0-5.9	2.0-5.0	.32	.32	5	7	38
	10-60	---	---	45-60	1.15-1.25	0.06-0.2	0.10-0.14	6.0-8.9	0.5-2.0	.20	.20			
Lemonex	0-8	---	---	27-35	1.20-1.30	0.2-0.6	0.08-0.11	3.0-5.9	2.0-3.0	.17	.32	2	8	0
	8-27	---	---	40-50	1.30-1.40	0.06-0.2	0.09-0.15	6.0-8.9	0.5-2.0	.17	.32			
	27-37	---	---	---	---	---	---	---	---	---	---			
Alding	0-10	---	---	20-27	1.10-1.30	0.6-2	0.10-0.14	0.0-2.9	2.0-3.0	.20	.28	2	7	38
	10-16	---	---	40-60	1.30-1.50	0.06-0.2	0.09-0.14	6.0-8.9	0.2-2.0	.24	.32			
	16-20	---	---	---	---	---	---	---	---	---	---			
39E: Ruddley	0-8	---	---	18-27	1.10-1.20	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	0.2-0.6	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---	1.0-2.0	.10	.10	1	8	0
	8-12	---	---	---	---	---	---	---	---	---	---			
Clay Soil 12-20"	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ruddley 20-40"	0-8	---	---	18-27	1.10-1.20	0.6-2	0.15-0.18	0.0-2.9	2.0-4.0	.28	.28	2	6	48
	8-18	---	---	27-35	1.20-1.30	0.2-0.6	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	18-28	---	---	---	---	---	---	---	---	---	---			
40E: Simas	0-5	---	---	27-40	1.10-1.20	0.2-0.6	0.16-0.19	3.0-5.9	1.0-2.0	.28	.28	3	6	48
	5-21	---	---	50-60	1.20-1.30	0.001-0.06	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.001-0.06	0.09-0.13	6.0-8.9	0.5-1.0	.20	.24			

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
40E: Day	0-10	---	---	40-45	1.20-1.40	0.001-0.06	0.13-0.16	6.0-8.9	1.0-2.0	.20	.20	5	4	86
	10-43	---	---	60-75	1.20-1.40	0.001-0.06	0.13-0.16	6.0-8.9	0.5-1.0	.17	.17			
Licksillet	0-8	---	---	15-25	1.25-1.35	0.6-2	0.08-0.14	0.0-2.9	1.0-2.0	.15	.32	1	8	0
	8-15	---	---	23-33	1.30-1.40	0.6-2	0.06-0.14	0.0-2.9	0.5-1.0	.20	.32			
	15-19	---	---	---	---	---	---	---	---	---	---			
Tub	0-8	---	---	27-40	1.20-1.30	0.2-0.6	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.06-0.2	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	0.2-0.6	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Simas Stv	0-5	---	---	27-40	1.10-1.20	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.17	.28	3	8	0
	5-21	---	---	50-60	1.20-1.30	0.001-0.06	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.001-0.06	0.09-0.13	6.0-8.9	0.5-1.0	.17	.24			
48E: Tub	0-8	---	---	27-40	1.20-1.30	0.2-0.6	0.16-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
	8-23	---	---	40-60	1.30-1.40	0.06-0.2	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	0.2-0.6	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Simas	0-5	---	---	27-40	1.10-1.20	0.2-0.6	0.08-0.11	3.0-5.9	1.0-2.0	.17	.28	3	8	0
	5-21	---	---	50-60	1.20-1.30	0.001-0.06	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.001-0.06	0.09-0.13	6.0-8.9	0.5-1.0	.17	.24			
Clay Soil 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	
49D: Tub	0-8	---	---	27-40	1.20-1.30	0.2-0.6	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.06-0.2	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	0.2-0.6	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Clay Soil 20-40"	---	---	---	---	---	---	---	---	---	---	---	---	---	

Table J1b. - Physical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility Pct	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/In		Pct					
49D:														
Simas	0-5	---	---	27-40	1.10-1.20	0.2-0.6	0.16-0.19	3.0-5.9	1.0-2.0	.28	.28	3	6	48
	5-21	---	---	50-60	1.20-1.30	0.001-0.06	0.11-0.14	6.0-8.9	0.5-2.0	.20	.24			
	21-60	---	---	35-50	1.20-1.30	0.001-0.06	0.09-0.13	6.0-8.9	0.5-1.0	.20	.24			
Tub	0-8	---	---	27-40	1.20-1.30	0.2-0.6	0.12-0.15	3.0-5.9	2.0-3.0	.24	.28	5	7	38
	8-23	---	---	40-60	1.30-1.40	0.06-0.2	0.11-0.14	6.0-8.9	1.0-2.0	.20	.24			
	23-60	---	---	25-40	1.30-1.40	0.2-0.6	0.14-0.19	6.0-8.9	0.5-1.0	.24	.28			
Wet Spots	---	---	---	---	---	---	---	---	---	---	---	---	---	---
54E:														
Venator	0-5	---	---	18-25	1.10-1.30	0.6-2	0.06-0.10	0.0-2.9	1.0-2.0	.17	.43	1	8	0
	5-12	---	---	18-35	1.20-1.40	0.6-2	0.06-0.12	0.0-2.9	0.5-1.0	.17	.49			
	12-16	---	---	---	---	---	---	---	---	---	---			
Gwin	0-3	---	---	10-20	1.20-1.30	0.6-2	0.10-0.13	0.0-2.9	2.0-3.0	.15	.37	1	7	38
	3-13	---	---	27-35	1.20-1.40	0.2-0.6	0.07-0.11	0.0-2.9	1.0-2.0	.10	.43			
	13-17	---	---	---	---	---	---	---	---	---	---			
Logdell	0-8	---	---	18-27	1.20-1.30	0.6-2	0.06-0.14	0.0-2.9	1.0-2.0	.10	.37	1	8	0
	8-18	---	---	---	---	---	---	---	---	---	---			
Rock Outcrop	0-60	---	---	0	---	---	0.00	---	---	---	---	---	8	0

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Table J2. - Chemical Properties of the Soils

Grant County, Oregon, Central Part

Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth In	Cation Exchange Capacity	Effective Cation Exchange Capacity	Soil Reaction	Calcium Carbon- ate Pct	Gypsym Pct	Salinity mmhos/cm	Sodium Adsorp- tion Ratio
		meq/100 g	meq/100 g	pH				
1F:								
Alding	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---
Rock Outcrop	0-60	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---
	8-12	---	---	---	---	---	---	---
Soils 20-40"	---	---	---	---	---	---	---	---
Ruddley	0-8	10-20	---	6.1 - 6.5	0	0	0.0	0
	8-18	15-20	---	6.6 - 7.3	0	0	0.0	0
	18-28	---	---	---	---	---	---	---
24E:								
Lemonex	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-27	30-35	---	6.6 - 7.3	0	0	0.0	0
	27-37	---	---	---	---	---	---	---
Alding	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---
Hankins	0-10	30-50	---	6.1 - 7.3	0	0	0.0	0
	10-60	50-60	---	6.1 - 7.8	0	0	0.0	0
Ruddley	0-8	10-20	---	6.1 - 6.5	0	0	0.0	0
	8-18	15-20	---	6.6 - 7.3	0	0	0.0	0
	18-28	---	---	---	---	---	---	---
25E:								
Lemonex	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-27	30-35	---	6.6 - 7.3	0	0	0.0	0
	27-37	---	---	---	---	---	---	---
Rock Outcrop	0-60	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---
	8-12	---	---	---	---	---	---	---
Alding	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---

Table J2. - Chemical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Cation	Effective	Soil	Calcium	Gypsum	Salinity	Sodium
		Exchange	Cation		Carbon-			
	In	Capacity	Exchange	Reaction	ate	Pct	mmhos/cm	tion
		meq/100 g	Capacity	pH	Pct			Ratio
25E: Hankins	0-10	30-50	---	6.1 - 7.3	0	0	0.0	0
	10-60	50-60	---	6.1 - 7.8	0	0	0.0	0
28E: Mcgarr	0-14	10-20	---	6.1 - 7.3	---	0	0.0	0
	14-31	15-20	---	6.1 - 7.3	---	0	0.0	0
	31-35	---	---	---	---	---	---	---
Anatone	0-3	10-20	---	6.1 - 7.3	0	0	0.0	0
	3-11	10-25	---	6.1 - 7.3	0	0	0.0	0
	11-15	---	---	---	---	---	---	---
Hankins	0-10	30-50	---	6.1 - 7.3	0	0	0.0	0
	10-60	50-60	---	6.1 - 7.8	0	0	0.0	0
Top	0-5	15-25	---	6.1 - 7.3	0	0	0.0	0
	5-36	25-30	---	6.1 - 7.3	0	0	0.0	0
	36-45	20-30	---	6.1 - 7.3	0	0	0.0	0
	45-55	---	---	---	---	---	---	---
Rock Outcrop	0-60	---	---	---	---	---	0.0	---
28F: Mcgarr	0-14	10-20	---	6.1 - 7.3	---	0	0.0	0
	14-31	15-20	---	6.1 - 7.3	---	0	0.0	0
	31-35	---	---	---	---	---	---	---
Anatone	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---
Mcgarr 6-10" Ash Surf	0-14	10-20	---	6.1 - 7.3	---	0	0.0	0
	14-31	15-20	---	6.1 - 7.3	---	0	0.0	0
	31-35	---	---	---	---	---	---	---
Top	0-5	15-25	---	6.1 - 7.3	0	0	0.0	0
	5-36	25-30	---	6.1 - 7.3	0	0	0.0	0
	36-45	20-30	---	6.1 - 7.3	0	0	0.0	0
	45-55	---	---	---	---	---	---	---
Rock Outcrop	0-60	---	---	---	---	---	0.0	---
31B: Oxwall	0-2	20-30	---	6.1 - 6.5	0	0	0.0	0
	2-8	20-25	---	6.1 - 6.5	0	0	0.0	0
	8-13	30-45	---	6.6 - 7.3	0	0	0.0	0
	13-23	---	---	---	---	---	---	---

Table J2. - Chemical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Cation Exchange Capacity	Effective Cation Exchange Capacity	Soil Reaction	Calcium Carbon- ate Pct	Gypsym Pct	Salinity mmhos/cm	Sodium Adsorp- tion Ratio
	In	meq/100 g	meq/100 g	pH				
31B:								
Oxbow	0-12	20-30	---	6.1 - 7.3	0	0	0.0	0
	12-27	35-40	---	6.6 - 8.4	0	0	0.0-2.0	0
	27-37	---	---	---	---	---	---	---
Tub	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-23	30-45	---	7.4 - 7.8	0	0	0.0	0
	23-60	20-30	---	7.9 - 8.4	5-10	0	0.0-2.0	0
36F:								
Rock Outcrop	0-60	---	---	---	---	---	---	---
Lemonex	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-27	30-35	---	6.6 - 7.3	0	0	0.0	0
	27-37	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8	---	---	---	---	---	---	---
	8-12	---	---	---	---	---	---	---
Alding	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---
Lemonex 40-60"	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-27	30-35	---	6.6 - 7.3	0	0	0.0	0
	27-37	---	---	---	---	---	---	---
38E:								
Ruddley Loam	0-8	10-20	---	6.1 - 6.5	0	0	0.0	0
	8-18	15-20	---	6.6 - 7.3	0	0	0.0	0
	18-28	---	---	---	---	---	---	---
Hankins	0-10	30-50	---	6.1 - 7.3	0	0	0.0	0
	10-60	50-60	---	6.1 - 7.8	0	0	0.0	0
Lemonex	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-27	30-35	---	6.6 - 7.3	0	0	0.0	0
	27-37	---	---	---	---	---	---	---
Alding	0-10	15-25	---	6.6 - 7.3	0	0	0.0	0
	10-16	30-45	---	6.6 - 7.3	0	0	0.0	0
	16-20	---	---	---	---	---	---	---
39E:								
Ruddley	0-8	10-20	---	6.1 - 6.5	0	0	0.0	0
	8-18	15-20	---	6.6 - 7.3	0	0	0.0	0
	18-28	---	---	---	---	---	---	---

Table J2. - Chemical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Cation Exchange Capacity	Effective Cation Exchange Capacity	Soil Reaction	Calcium Carbon- ate Pct	Gypsum Pct	Salinity mmhos/cm	Sodium Adsorp- tion Ratio
	In	meq/100 g	meq/100 g	pH				
39E:								
Rock Outcrop	0-60	---	---	---	---	---	---	---
Lithic Xerochrepts	0-8 8-12	---	---	---	---	---	---	---
Clay Soil 12-20"	---	---	---	---	---	---	---	---
Ruddley 20-40"	0-8 8-18 18-28	10-20 15-20 ---	--- --- ---	6.1 - 6.5 6.6 - 7.3 ---	0 0 ---	0 0 ---	0.0 0.0 ---	0 0 ---
40E:								
Simas	0-5 5-21 21-60	20-30 35-45 25-35	--- --- ---	6.6 - 7.8 7.4 - 8.4 7.9 - 9.0	0 0 5-10	0 0 0	0.0 0.0 0.0-2.0	0 0 0
Day	0-10 10-43	30-35 40-50	--- ---	6.6 - 8.4 6.6 - 9.0	0-5 5-15	0 0	0.0 0.0	0 0
Lickskillet	0-8 8-15 15-19	10-25 15-25 ---	--- --- ---	6.1 - 7.3 6.6 - 8.4 ---	0 0-5 ---	0 0 ---	0.0 0.0-2.0 ---	0 0 ---
Tub	0-8 8-23 23-60	20-30 30-45 20-30	--- --- ---	6.6 - 7.3 7.4 - 7.8 7.9 - 8.4	0 0 5-10	0 0 0	0.0 0.0 0.0-2.0	0 0 0
Simas Stv	0-5 5-21 21-60	20-30 35-45 25-35	--- --- ---	6.6 - 7.8 7.4 - 8.4 7.9 - 9.0	0 0 5-10	0 0 0	0.0 0.0 0.0-2.0	0 0 0
48E:								
Tub	0-8 8-23 23-60	20-30 30-45 20-30	--- --- ---	6.6 - 7.3 7.4 - 7.8 7.9 - 8.4	0 0 5-10	0 0 0	0.0 0.0 0.0-2.0	0 0 0
Simas	0-5 5-21 21-60	20-30 35-45 25-35	--- --- ---	6.6 - 7.8 7.4 - 8.4 7.9 - 9.0	0 0 5-10	0 0 0	0.0 0.0 0.0-2.0	0 0 0
Clay Soil 20-40"	---	---	---	---	---	---	---	---
49D:								

Table J2. - Chemical Properties of the Soils - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Depth	Cation Exchange Capacity	Effective Cation Exchange Capacity	Soil Reaction	Calcium Carbon-	Gypsum	Salinity	Sodium Adsorp- tion Ratio
	In	meq/100 g	meq/100 g	pH	ate Pct	Pct	mmhos/cm	
49D: Tub	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-23	30-45	---	7.4 - 7.8	0	0	0.0	0
	23-60	20-30	---	7.9 - 8.4	5-10	0	0.0-2.0	0
Clay Soil 20-40"	---	---	---	---	---	---	---	---
Simas	0-5	20-30	---	6.6 - 7.8	0	0	0.0	0
	5-21	35-45	---	7.4 - 8.4	0	0	0.0	0
	21-60	25-35	---	7.9 - 9.0	5-10	0	0.0-2.0	0
Tub	0-8	20-30	---	6.6 - 7.3	0	0	0.0	0
	8-23	30-45	---	7.4 - 7.8	0	0	0.0	0
	23-60	20-30	---	7.9 - 8.4	5-10	0	0.0-2.0	0
Wet Spots	---	---	---	---	---	---	---	---
54E: Venator	0-5	10-15	---	6.1 - 7.3	0	0	0.0	0
	5-12	10-20	---	6.6 - 7.3	0	0	0.0	0
	12-16	---	---	---	---	---	---	---
Gwin	0-3	10-15	---	6.6 - 7.3	0	0	0.0	0
	3-13	15-30	---	6.6 - 7.3	0	0	0.0	0
	13-17	---	---	---	---	---	---	---
Logdell	0-8	10-15	---	6.1 - 7.3	0	0	0.0	0
	8-18	---	---	---	---	---	---	---
Rock Outcrop	0-60	---	---	---	---	---	0.0	---

Table K1. - Water Features

Grant County, Oregon, Central Part

Depths of layers are in feet. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.

Map Symbol and Soil Name	Hydrologic Group	Month	Water Table			Ponding		Flooding	
			Upper Limit	Lower Limit	Surface Depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
1F:									
Alding	D	Jan-Dec			---	---	None	---	None
Rock Outcrop	D	Jan-Dec			---	---	None	---	None
Lithic Xerochrepts	D	Jan-Dec			---	---	None	---	None
Soils 20-40"	---	Jan-Dec			---	---	None	---	None
Ruddley	D	Jan-Dec			---	---	None	---	None
24E:									
Lemonex	C	Jan-Dec			---	---	None	---	None
Alding	D	Jan-Dec			---	---	None	---	None
Hankins	C	Jan-Dec			---	---	None	---	None
Ruddley	D	Jan-Dec			---	---	None	---	None
25E:									
Lemonex	C	Jan-Dec			---	---	None	---	None
Rock Outcrop	D	Jan-Dec			---	---	None	---	None
Lithic Xerochrepts	D	Jan-Dec			---	---	None	---	None
Alding	D	Jan-Dec			---	---	None	---	None
Hankins	C	Jan-Dec			---	---	None	---	None
28E:									

Table K1. - Water Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Hydrologic Group	Month	Water Table			Ponding	Flooding		
			Upper Limit	Lower Limit	Surface Depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
28E: Mcgarr	C	Jan-Dec	---	---	---	---	None	---	None
Anatone	D	Jan-Dec	---	---	---	---	None	---	None
Hankins	C	Jan-Dec	---	---	---	---	None	---	None
Top	C	Jan-Dec	---	---	---	---	None	---	None
Rock Outcrop	D	Jan-Dec	---	---	---	---	None	---	None
28F: Mcgarr	C	Jan-Dec	---	---	---	---	None	---	None
Anatone	D	Jan-Dec	---	---	---	---	None	---	None
Mcgarr 6-10" Ash Surf	C	Jan-Dec	---	---	---	---	None	---	None
Top	C	Jan-Dec	---	---	---	---	None	---	None
Rock Outcrop	D	Jan-Dec	---	---	---	---	None	---	None
31B: Oxwall	D	Jan-Dec	---	---	---	---	None	---	None
Oxbow	C	Jan-Dec	---	---	---	---	None	---	None
Tub	C	Jan-Dec	---	---	---	---	None	---	None
36F: Rock Outcrop	D	Jan-Dec	---	---	---	---	None	---	None
Lemonex	C	Jan-Dec	---	---	---	---	None	---	None
Lithic Xerochrepts	D	Jan-Dec	---	---	---	---	None	---	None

Table K1. - Water Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Hydrologic Group	Month	Water Table			Ponding	Flooding		
			Upper Limit	Lower Limit	Surface Depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
36F: Alding	D	Jan-Dec	---	---	---	---	None	---	None
Lemonex 40-60"	C	Jan-Dec	---	---	---	---	None	---	None
38E: Ruddley Loam	D	Jan-Dec	---	---	---	---	None	---	None
Hankins	C	Jan-Dec	---	---	---	---	None	---	None
Lemonex	C	Jan-Dec	---	---	---	---	None	---	None
Alding	D	Jan-Dec	---	---	---	---	None	---	None
39E: Ruddley	D	Jan-Dec	---	---	---	---	None	---	None
Rock Outcrop	D	Jan-Dec	---	---	---	---	None	---	None
Lithic Xerochrepts	D	Jan-Dec	---	---	---	---	None	---	None
Clay Soil 12-20"	---	Jan-Dec	---	---	---	---	None	---	None
Ruddley 20-40"	D	Jan-Dec	---	---	---	---	None	---	None
40E: Simas	C	Jan-Dec	---	---	---	---	None	---	None
Day	D	Jan-Dec	---	---	---	---	None	---	None
Lickskillet	D	Jan-Dec	---	---	---	---	None	---	None
Tub	C	Jan-Dec	---	---	---	---	None	---	None
Simas Stv	C	Jan-Dec	---	---	---	---	None	---	None

Table K1. - Water Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Hydrologic Group	Month	Water Table			Ponding	Flooding		
			Upper Limit Ft	Lower Limit Ft	Surface Depth Ft	Duration	Frequency	Duration	Frequency
48E: Tub	C	Jan-Dec			---	---	None	---	None
Simas	C	Jan-Dec			---	---	None	---	None
Clay Soil 20-40"	---	Jan-Dec			---	---	None	---	None
49D: Tub	C	Jan-Dec			---	---	None	---	None
Clay Soil 20-40"	---	Jan-Dec			---	---	None	---	None
Simas	C	Jan-Dec			---	---	None	---	None
Tub	C	Jan-Dec			---	---	None	---	None
Wet Spots	---	Jan-Dec			---	---	None	---	None
54E: Venator	C	Jan-Dec			---	---	None	---	None
Gwin	D	Jan-Dec			---	---	None	---	None
Logdell	B	Jan-Dec			---	---	None	---	None
Rock Outcrop	D	Jan-Dec			---	---	None	---	None

Table K2. - Soil Features

Grant County, Oregon, Central Part

Absence of an entry indicates that the feature is not a concern or that data were not estimated.

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth to Top	to Top Thickness	Thickness Hardness	Hardness	Initial		Action Steel	Uncoated
		In	In		In	In			
1F: Alding	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
Lithic Xerochrepts	Bedrock (lithic)	3-15	---	Indurated	0	---	Low	High	Low
Soils 20-40"	---	---	---	---	---	---	---	---	---
Ruddley	Bedrock (paralithic)	12-20	---	---	0	---	Moderate	Moderate	Low
24E: Lemonex	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	High	Low
Alding	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
Hankins	---	---	---	---	0	---	Moderate	Moderate	Low
Ruddley	Bedrock (paralithic)	12-20	---	---	0	---	Moderate	Moderate	Low
25E: Lemonex	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	High	Low

Table K2. - Soil Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth	to Top	Thickness	Hardness	Initial		Action	Uncoated
		to Top	Thickness	Hardness				Steel	
		In	In		In	In			
25E: Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
Lithic Xerochrepts	Bedrock (lithic)	3-15	---	Indurated	0	---	Low	High	Low
Alding	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
Hankins	---	---	---	---	0	---	Moderate	Moderate	Low
28E: Mcgarr	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	Moderate	Low
Anatone	Bedrock (lithic)	10-20	---	Indurated	0	---	Moderate	Moderate	Low
Hankins	---	---	---	---	0	---	Moderate	Moderate	Low
Top	Bedrock (lithic)	40-60	---	Indurated	0	---	Moderate	High	Low
Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
28F: Mcgarr	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	Moderate	Low

Table K2. - Soil Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth	to Top	Thickness	Hardness	Initial		Action	Uncoated
		to Top In	Thickness In	Hardness	In	In		Steel	
28F: Anatone	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
Mcgarr 6-10" Ash Surf	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	Moderate	Low
Top	Bedrock (lithic)	40-60	---	Indurated	0	---	Moderate	High	Low
Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
31B: Oxwall	Duripan	10-20	4-17	Indurated	0	---	Moderate	Moderate	Low
Oxbow	Duripan	20-40	0-3	Indurated	0	---	Moderate	High	Low
Tub	---	---	---	---	0	---	Moderate	High	Low
36F: Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
Lemonex	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	High	Low
Lithic Xerochrepts	Bedrock (lithic)	3-15	---	Indurated	0	---	Low	High	Low

Table K2. - Soil Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth	to Top	Thickness	Hardness	Initial		Action	Uncoated
		to Top In	Thickness In	Hardness	In	In		Steel	
36F: Alding	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
Lemonex 40-60"	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	High	Low
38E: Ruddley Loam	Bedrock (paralithic)	12-20	---	---	0	---	Moderate	Moderate	Low
Hankins	---	---	---	---	0	---	Moderate	Moderate	Low
Lemonex	Bedrock (lithic)	20-40	---	Indurated	0	---	Moderate	High	Low
Alding	Bedrock (paralithic)	10-20	---	---	0	---	Moderate	High	Low
39E: Ruddley	Bedrock (paralithic)	12-20	---	---	0	---	Moderate	Moderate	Low
Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---
Lithic Xerochrepts	Bedrock (lithic)	3-15	---	Indurated	0	---	Low	High	Low
Clay Soil 12-20"	---	---	---	---	---	---	---	---	---

Table K2. - Soil Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth	to Top	Thickness	Hardness	Initial		Action	Uncoated
		to Top In	Thickness In	Hardness	In	In		Steel	
39E: Ruddley 20-40"	Bedrock (paralithic)	12-20	---	---	0	---	Moderate	Moderate	Low
40E: Simas	---	---	---	---	0	---	Low	High	Low
Day	---	---	---	---	0	---	Moderate	High	Low
Lickskillet	Bedrock (lithic)	12-20	---	Indurated	0	---	Moderate	High	Low
Tub	---	---	---	---	0	---	Moderate	High	Low
Simas Stv	---	---	---	---	0	---	Low	High	Low
48E: Tub	---	---	---	---	0	---	Moderate	High	Low
Simas	---	---	---	---	0	---	Low	High	Low
Clay Soil 20-40"	---	---	---	---	---	---	---	---	---
49D: Tub	---	---	---	---	0	---	Moderate	High	Low

Table K2. - Soil Features - Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Kind Concrete Kind	Restrictive Layer			Subsidence		Potential for Frost Total	Risk of Corrosion	
		Depth	to Top	Thickness	Hardness	Initial		Action	Uncoated
		to Top	Thickness	Hardness				Steel	
		In	In		In	In			
49D: Clay Soil 20-40"	---	---	---	---	---	---	---	---	---
Simas	---	---	---	---	0	---	Low	High	Low
Tub	---	---	---	---	0	---	Moderate	High	Low
Wet Spots	---	---	---	---	---	---	---	---	---
54E: Venator	Bedrock (lithic)	10-20	---	Indurated	0	---	Low	Moderate	Low
Gwin	Bedrock (lithic)	10-20	---	Indurated	0	---	Moderate	Moderate	Low
Logdell	Bedrock (lithic)	4-12	---	Indurated	0	---	Moderate	Low	Low
Rock Outcrop	Bedrock (lithic)	0	---	Indurated	0	---	None	---	---

Distribution Generation Date: 9/20/2002

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Table Q1. - Classification of the Soils

Grant County, Oregon, Central Part

An asterisk following the soil name indicates a taxadjunct to the series.

Soil Name	Family or Higher Taxonomic Classification
Alding	Clayey, Montmorillonitic, Frigid Lithic Ultic Argixerolls
Anatone	Clayey, Montmorillonitic, Superactive, Frigid Lithic Ultic Argixerolls
Anatone*	Loamy-Skeletal, Mixed, Superactive, Frigid Lithic Haploxerolls
Day	Very-Fine, Montmorillonitic, Mesic Chromic Haploxererts
Gwin	Loamy-Skeletal, Mixed, Superactive, Mesic Lithic Argixerolls
Hankins	Fine, Montmorillonitic, Frigid Ultic Palexerolls
Lemonex	Fine, Montmorillonitic, Frigid Ultic Argixerolls
Lemonex 40-60"	Fine, Montmorillonitic, Frigid Ultic Argixerolls
Lickskillet	Loamy-Skeletal, Mixed, Superactive, Mesic Lithic Haploxerolls
Lithic Xerochrepts	Lithic Xerochrepts
Lithic Xerochrepts*	Frigid Lithic Xerochrepts
Logdell	Loamy-Skeletal, Mixed, Frigid Lithic Ultic Haploxerolls
Mcgarr	Fine-Loamy, Mixed, Frigid Pachic Ultic Haploxerolls
Mcgarr 6-10" Ash Surf	Fine-Loamy, Mixed, Frigid Pachic Ultic Haploxerolls
Oxbow	Fine, Montmorillonitic, Mesic Typic Durixerolls
Oxwall	Clayey, Montmorillonitic, Mesic, Shallow Palexerollic Durixerolls
Ruddley	Loamy, Mixed, Frigid, Shallow Ultic Argixerolls
Ruddley 20-40"	Loamy, Mixed, Frigid, Shallow Ultic Argixerolls
Ruddley Loam	Loamy, Mixed, Frigid, Shallow Ultic Argixerolls
Simas	Fine, Montmorillonitic, Mesic Aridic Palexerolls
Simas Stv	Fine, Montmorillonitic, Mesic Aridic Palexerolls
Top	Fine, Montmorillonitic, Frigid Pachic Ultic Argixerolls
Tub	Fine, Montmorillonitic, Mesic Calcic Pachic Argixerolls
Venator	Loamy-Skeletal, Mixed, Mesic Lithic Haploxerolls

Distribution Generation Date: 9/20/2002

Page 1 of 1

Hydric Soils List

Grant County, Oregon, Central Part

Map Symbol and Map Unit Name	Component	Hydric	Local Landform	Hydric Criteria Code	Hydric Soils Criteria			Acres
					Meets Saturation	Meets Flooding Criteria	Meets Ponding Criteria	
1F: Alding-rock outcrop complex, 30 to 70 percent slopes	Alding	No	---	---	---	---	---	2,595
	Rock Outcrop	No	---	---	---	---	---	1,038
	Lithic Xerochrepts	No	---	---	---	---	---	779
	Soils 20-40"	No	---	---	---	---	---	415
	Ruddley	No	---	---	---	---	---	363
24E: Lemonex stony clay loam, 10 to 45 percent slopes	Lemonex	No	---	---	---	---	---	1,675
	Alding	No	---	---	---	---	---	99
	Hankins	No	---	---	---	---	---	99
	Ruddley	No	---	---	---	---	---	99
25E: Lemonex-rock outcrop complex, 3 to 45 percent slopes	Lemonex	No	---	---	---	---	---	6,610
	Rock Outcrop	No	---	---	---	---	---	2,644
	Lithic Xerochrepts	No	---	---	---	---	---	1,983
	Alding	No	---	---	---	---	---	1,058
	Hankins	No	---	---	---	---	---	925
28E: Mcgarr stony loam, 5 to 45 percent slopes	Mcgarr	No	---	---	---	---	---	11,620
	Anatone	No	---	---	---	---	---	547
	Hankins	No	---	---	---	---	---	547
	Top	No	---	---	---	---	---	547
	Rock Outcrop	No	---	---	---	---	---	410
28F: Mcgarr stony loam, 45 to 75 percent slopes	Mcgarr	No	---	---	---	---	---	2,363
	Anatone	No	---	---	---	---	---	111

Hydric Soils List - Continued

Grant County, Oregon, Central Part

Map Symbol and Map Unit Name	Component	Hydric	Local Landform	Hydric Criteria Code	Hydric Soils Criteria			Acres
					Meets Saturation	Meets Flooding Criteria	Meets Ponding Criteria	
28F: Mcgarr stony loam, 45 to 75 percent slopes	Mcgarr 6-10" Ash Surf	No	---	---	---	---	---	111
	Top	No	---	---	---	---	---	111
	Rock Outcrop	No	---	---	---	---	---	83
31B: Oxwall very stony silty clay loam, 2 to 7 percent slopes	Oxwall	No	---	---	---	---	---	12,359
	Oxbow	No	---	---	---	---	---	1,163
	Tub	No	---	---	---	---	---	1,018
36F: Rock outcrop-lemonex complex, 30 to 75 percent slopes	Rock Outcrop	No	---	---	---	---	---	1,232
	Lemonex	No	---	---	---	---	---	1,056
	Lithic Xerochrepts	No	---	---	---	---	---	704
	Alding	No	---	---	---	---	---	282
	Lemonex 40-60"	No	---	---	---	---	---	246
38E: Ruddley loam, 5 to 40 percent slopes	Ruddley Loam	No	---	---	---	---	---	1,536
	Hankins	No	---	---	---	---	---	134
	Lemonex	No	---	---	---	---	---	134
	Alding	No	---	---	---	---	---	115
39E: Ruddley-rock outcrop complex, 5 to 40 percent slopes	Ruddley	No	---	---	---	---	---	3,180
	Rock Outcrop	No	---	---	---	---	---	1,272
	Lithic Xerochrepts	No	---	---	---	---	---	954
	Clay Soil 12-20"	No	---	---	---	---	---	509
	Ruddley 20-40"	No	---	---	---	---	---	445
40E: Simas clay loam, 8 to 30 percent south slopes	Simas	No	---	---	---	---	---	20,001

Hydric Soils List - Continued

Grant County, Oregon, Central Part

Map Symbol and Map Unit Name	Component	Hydric	Local Landform	Hydric Criteria Code	Hydric Soils Criteria			Acres
					Meets Saturation	Meets Flooding Criteria	Meets Ponding Criteria	
40E: Simas clay loam, 8 to 30 percent south slopes	Day	No	---	---	---	---	---	941
	Lickskillet	No	---	---	---	---	---	941
	Tub	No	---	---	---	---	---	941
	Simas Stv	No	---	---	---	---	---	706
48E: Tub clay loam, 20 to 40 percent north slopes	Tub	No	---	---	---	---	---	8,407
	Simas	No	---	---	---	---	---	791
	Clay Soil 20-40"	No	---	---	---	---	---	692
49D: Tub stony clay loam, 3 to 20 percent slopes	Tub	No	---	---	---	---	---	4,038
	Clay Soil 20-40"	No	---	---	---	---	---	238
	Simas	No	---	---	---	---	---	238
	Tub	No	---	---	---	---	---	190
	Wet Spots	Yes	Hill	2B3	Yes	No	No	48
54E: Venator very shaly loam, 5 to 40 percent slopes	Venator	No	---	---	---	---	---	1,420
	Gwin	No	---	---	---	---	---	84
	Logdell	No	---	---	---	---	---	84
	Rock Outcrop	No	---	---	---	---	---	84

Selected Mapunit Text Entries

Grant County, Oregon, Central Part

Only those mapunits that have entries for the selected text kinds and categories are included in this report.

Map Unit: 1F - Alding-rock outcrop complex, 30 to 70 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Alding soil is 10 to 20 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard. Rock outcrop consists of exposures of bare, hard bedrock other than lava flows and rock-lined pits. It consists mainly of unweathered volcanic, metamorphic or sedimentary rock. Rock outcrop has little or no vegetation.

Map Unit: 24E - Lemonex stony clay loam, 10 to 45 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Lemonex soil is 20 to 40 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard.

Map Unit: 25E - Lemonex-rock outcrop complex, 3 to 45 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Lemonex soil is 20 to 40 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard. Rock outcrop consists of exposures of bare, hard bedrock other than lava flows and rock-lined pits. It consists mainly of unweathered volcanic, metamorphic or sedimentary rock. Rock outcrop has little or no vegetation.

Map Unit: 28E - McGarr stony loam, 5 to 45 percent slopes

Text Kind/Category: Nontechnical description/SOI

The McGarr soil is 20 to 40 inches deep to bedrock. It is loamy, well drained and occurs on mountains. Water erosion is a potential

Map Unit: 28F - McGarr stony loam, 45 to 75 percent slopes

Text Kind/Category: Nontechnical description/SOI

The McGarr soil is 20 to 40 inches deep to bedrock. It is loamy, well drained and occurs on mountains. Water erosion is a potential

Map Unit: 31B - Oxwall very stony silty clay loam, 2 to 7 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Oxwall soil is over 60 inches deep to bedrock, a hardpan is at 10 to 20 inches. It is clayey, well drained and occurs on terraces. Permeability is slow. Water erosion is a potential hazard.

Selected Mapunit Text Entries - Continued

Grant County, Oregon, Central Part

Map Unit: 36F - Rock outcrop-lemonex complex, 30 to 75 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Lemonex soil is 20 to 40 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard. Rock outcrop consists of exposures of bare, hard bedrock other than lava flows and rock-lined pits. It consists mainly of unweathered volcanic, metamorphic or sedimentary rock. Rock outcrop has little or no vegetation.

Map Unit: 38E - Ruddley loam, 5 to 40 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Ruddley soil is 12 to 20 inches deep to bedrock. It is loamy, well drained and occurs on mountains. Water erosion is a potential

Map Unit: 39E - Ruddley-rock outcrop complex, 5 to 40 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Ruddley soil is 12 to 20 inches deep to bedrock. It is loamy, well drained and occurs on mountains. Water erosion is a potential hazard. Rock Outcrop consists of exposures of bare, hard bedrock other than lava flows and rock-lined pits. It consists mainly of unweathered volcanic, metamorphic or sedimentary rock. Rock outcrop has little or no vegetation.

Map Unit: 40E - Simas clay loam, 8 to 30 percent south slopes

Text Kind/Category: Nontechnical description/SOI

The Simas soil, cobbly phase, is over 60 inches deep to bedrock. It is clayey, well drained, and occurs on mountains. Permeability is slow. The soil is alkaline. Water erosion is a potential hazard.

Map Unit: 48E - Tub clay loam, 20 to 40 percent north slopes

Text Kind/Category: Nontechnical description/SOI

The Tub soil is over 60 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard.

Map Unit: 49D - Tub stony clay loam, 3 to 20 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Tub soil is over 60 inches deep to bedrock. It is clayey, well drained and occurs on mountains. Permeability is slow. Water erosion is a potential hazard.

Selected Mapunit Text Entries - Continued

Grant County, Oregon, Central Part

Map Unit: 54E - Venator very shaly loam, 5 to 40 percent slopes

Text Kind/Category: Nontechnical description/SOI

The Venator soil is 10 to 20 inches deep to bedrock. It is loamy, high in rock fragments, well drained, and occurs on mountains. Water erosion is a potential hazard

Distribution Generation Date: 9/20/2002

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Selected Soil Interpretations 1

Grant County, Oregon, Central Part

The information in this table indicates the dominant soil condition, but does not eliminate the need for onsite investigation. Limiting features in this report are limited to the top 5 limitations. Additional limitations may exist.

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
1F: Alding	50	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low	
Soils 20-40"	8	Histosol - Not rated Horizon table contains no data	1.00	Histosol - Not rated Horizon table contains no data	1.00	High Horizon table contains no data Texture/coarse fragments Texture/surface depth/coarse fragments	1.00 1.00 1.00
Ruddley	7	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
24E: Lemonex	85	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Alding	5	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Hankins	5	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Ruddley fragments	5	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse	0.10
25E: Lemonex	50	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Low	
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	

Selected Soil Interpretations 1- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
25E: Alding	8	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Hankins	7	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
28E: Mcgarr	85	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Anatone	4	Slight		Moderate Slope/erodibility	0.50	Moderate Texture/surface depth/coarse fragments	0.50
Hankins	4	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Top	4	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Rock Outcrop	3	Not Rated		Not Rated		Not Rated	
28F: Mcgarr	85	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Anatone	4	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Mcgarr 6-10" Ash Surf	4	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Top	4	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low	
Rock Outcrop	3	Not Rated		Not Rated		Not Rated	
31B:							

Selected Soil Interpretations 1- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
31B: Oxwall	85	Slight		Moderate Slope/erodibility	0.50	Moderate Texture/surface depth/coarse fragments	0.50
						Texture/surface depth/coarse fragments	0.50
Oxbow	8	Slight		Slight		Low	
Tub	7	Slight		Severe Slope/erodibility	0.95	Low	
36F: Rock Outcrop	35	Not Rated		Not Rated		Not Rated	
Lemonex	30	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Low	
Lithic Xerochrepts	20	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low	
Alding	8	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Lemonex 40-60"	7	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Low	
38E: Ruddley Loam	80	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Hankins	7	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
Lemonex	7	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Low	
Alding	6	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
39E: Ruddley	50	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10

Selected Soil Interpretations 1- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
39E: Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Clay Soil 12-20"	8	Histosol - Not rated Horizon table contains no data	1.00	Histosol - Not rated Horizon table contains no data	1.00	High Horizon table contains no data Texture/coarse fragments Texture/surface depth/coarse fragments	1.00 1.00
Ruddley 20-40"	7	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low Texture/coarse fragments	0.10
40E: Simas	85	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Day	4	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Moderate Texture/coarse fragments	0.50
Lickskillet	4	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	High Texture/slope/coarse fragments	1.00
Tub	4	Slight		Severe Slope/erodibility	0.95	Low	
Simas Stv	3	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Low	
48E: Tub	85	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Simas	8	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Low	

Selected Soil Interpretations 1- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
48E: Clay Soil 20-40"	7	Histosol - Not rated Horizon table contains no data	1.00	Histosol - Not rated Horizon table contains no data	1.00	High Horizon table contains no data Texture/coarse fragments Texture/surface depth/coarse fragments	1.00 1.00 1.00
49D: Tub	85	Slight		Severe Slope/erodibility	0.95	Low	
Clay Soil 20-40"	5	Histosol - Not rated Horizon table contains no data	1.00	Histosol - Not rated Horizon table contains no data	1.00	High Horizon table contains no data Texture/coarse fragments Texture/surface depth/coarse fragments	1.00 1.00 1.00
Simas	5	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Tub	4	Slight		Severe Slope/erodibility	0.95	Low	
Wet Spots	1	Histosol - Not rated Horizon table contains no data	1.00	Histosol - Not rated Horizon table contains no data	1.00	High Horizon table contains no data Texture/coarse fragments Texture/surface depth/coarse fragments	1.00 1.00 1.00
54E: Venator	85	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Low	
Gwin	5	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Moderate Texture/surface depth/coarse fragments	0.50
Logdell	5	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	High Texture/slope/coarse fragments	1.00

Selected Soil Interpretations 1- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Erosion Hazard (Off-Road/Off-Trail)		FOR - Potential Erosion Hazard (Road/Trail)		FOR - Potential Fire Damage Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
54E: Rock Outcrop	5	Not Rated		Not Rated		Not Rated	

Selected Soil Interpretations 2

Grant County, Oregon, Central Part

The information in this table indicates the dominant soil condition, but does not eliminate the need for onsite investigation. Limiting features in this report are limited to the top 5 limitations. Additional limitations may exist.

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Seedling Mortality		FOR - Road Suitability (Natural Surface)-ID,OR,WA		FOR - Soil Rutting Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
1F:							
Alding	50	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	High Soil reaction	1.00	Poorly suited Slope	1.00	Slight	
Soils 20-40"	8	High Horizon table contains no data Soil reaction	1.00 1.00	Well suited		Severe Horizon table contains no data	1.00
Ruddley	7	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
24E:							
Lemonex	85	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Alding	5	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Hankins	5	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Ruddley	5	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
25E:							
Lemonex	50	Low		Moderately suited Slope Strength	0.50 0.50	Moderate Strength	0.50
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	High Soil reaction	1.00	Moderately suited Slope	0.50	Slight	
Alding	8	Low		Poorly suited Slope	1.00	Slight Strength	0.10

Selected Soil Interpretations 2- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Seedling Mortality		FOR - Road Suitability (Natural Surface)-ID,OR,WA		FOR - Soil Rutting Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
25E: Hankins	7	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
28E: Mcgarr	85	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Anatone	4	High Available water	1.00	Moderately suited Slope	0.50	Slight Strength	0.10
Hankins	4	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Top	4	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Rock Outcrop	3	Not Rated		Not Rated		Not Rated	
28F: Mcgarr	85	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Anatone	4	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Mcgarr 6-10" Ash Surf	4	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Top	4	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Rock Outcrop	3	Not Rated		Not Rated		Not Rated	
31B: Oxwall	85	Low		Moderately suited Strength	0.50	Moderate Strength	0.50
Oxbow	8	Low		Moderately suited Strength	0.50	Moderate Strength	0.50

Selected Soil Interpretations 2- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Seedling Mortality		FOR - Road Suitability (Natural Surface)-ID,OR,WA		FOR - Soil Rutting Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
31B: Tub	7	Low		Moderately suited Strength Slope	0.50 0.50	Severe Strength	1.00
36F: Rock Outcrop	35	Not Rated		Not Rated		Not Rated	
Lemonex	30	Low		Poorly suited Slope Strength	1.00 0.50	Moderate Strength	0.50
Lithic Xerochrepts	20	High Soil reaction	1.00	Poorly suited Slope	1.00	Slight	
Alding	8	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Lemonex 40-60"	7	Low		Poorly suited Slope Strength	1.00 0.50	Moderate Strength	0.50
38E: Ruddley Loam	80	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Hankins	7	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Lemonex	7	Low		Moderately suited Slope Strength	0.50 0.50	Moderate Strength	0.50
Alding	6	Low		Poorly suited Slope	1.00	Slight Strength	0.10
39E: Ruddley	50	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
Lithic Xerochrepts	15	High Soil reaction	1.00	Moderately suited Slope	0.50	Slight	

Selected Soil Interpretations 2- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Seedling Mortality		FOR - Road Suitability (Natural Surface)-ID,OR,WA		FOR - Soil Rutting Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
39E: Clay Soil 12-20"	8	High Horizon table contains no data Soil reaction	1.00 1.00	Well suited		Severe Horizon table contains no data	1.00
Ruddley 20-40"	7	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
40E: Simas	85	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Day	4	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Lickskillet	4	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Tub	4	Low		Moderately suited Strength Slope	0.50 0.50	Severe Strength	1.00
Simas Stv	3	Low		Moderately suited Slope Strength	0.50 0.50	Moderate Strength	0.50
48E: Tub	85	Low		Poorly suited Slope Strength	1.00 0.50	Severe Strength	1.00
Simas	8	Low		Moderately suited Slope Strength	0.50 0.50	Moderate Strength	0.50
Clay Soil 20-40"	7	High Horizon table contains no data Soil reaction	1.00 1.00	Well suited		Severe Horizon table contains no data	1.00
49D: Tub	85	Low		Moderately suited Strength Slope	0.50 0.50	Severe Strength	1.00

Selected Soil Interpretations 2- Continued

Grant County, Oregon, Central Part

Map Symbol and Soil Name	Pct of Map Unit	FOR - Potential Seedling Mortality		FOR - Road Suitability (Natural Surface)-ID,OR,WA		FOR - Soil Rutting Hazard	
		Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value	Rating Class and Limiting Features	Value
49D: Clay Soil 20-40"	5	High Horizon table contains no data Soil reaction	1.00 1.00	Well suited		Severe Horizon table contains no data	1.00
Simas	5	Low		Moderately suited Slope Strength	0.50 0.50	Severe Strength	1.00
Tub	4	Low		Moderately suited Strength Slope	0.50 0.50	Severe Strength	1.00
Wet Spots	1	High Horizon table contains no data Soil reaction	1.00 1.00	Well suited		Severe Horizon table contains no data	1.00
54E: Venator	85	Low		Moderately suited Slope	0.50	Slight Strength	0.10
Gwin	5	Low		Moderately suited Slope	0.50	Slight Strength	0.10
Logdell	5	Low		Poorly suited Slope	1.00	Slight Strength	0.10
Rock Outcrop	5	Not Rated		Not Rated		Not Rated	

Dynamic Metadata - Soil Interpretation Descriptions

Interpretation Name: **FOR - Potential Erosion Hazard (Off-Road/Off-Trail)**
Displayed in MANU - Table FOR-2. Forestland Management w/fuzzy rating

1/ FOR - POTENTIAL EROSION HAZARD (OFF-ROAD/OFF-TRAIL)

Interpretation Name: **FOR - Potential Erosion Hazard (Off-Road/Off-Trail)** Displayed in *Refer to section 537 of the National Forestry Manual for specific soil rating criteria.* MANU - Table FOR-2. Forestland Management w/fuzzy rating

Description:

Ratings indicate the hazard or risk of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface.

Ratings assess:

- * Sheet and rill erosion from exposed soil surfaces caused by various silvicultural practices, grazing, mining, fire, firebreaks, etc.*
- * Activities that disturb the site resulting in 50 to 75 percent bare ground in the affected area*
- * The use of any equipment type or size and uncontrolled grazing by livestock.*

Ratings assume:

- * 50 to 75% exposed, roughened mineral surface layer*

Ratings do not assess:

- * Clean tillage and other similar activities that disturb up to nearly 100 percent of the area and change the character of the soil*
- * Histosols.*
- * Individual precipitation or storm events.*
- * The impact of gully erosion.*
- * Sediment production/delivery ratio or streambank or streambed erosion for water courses on the site.*
- * Ground disturbing activities on the amount of surface or subsurface water runoff.*

Rating Classes (Crisp):

- * None - There is no erosion hazard associated with this activity.*
- * Slight - Erosion is unlikely under ordinary climatic conditions.*
- * Moderate - Some erosion is likely; control measures may be needed.*
- * Severe - Erosion is very likely; control measures for vegetation re-establishment on bare areas and structural measures are advised.*
- * Very Severe - Significant erosion is expected; loss of soil productivity and off-site damages are likely; control measures are costly and generally impractical.*

Interpretation Name: **FOR - Potential Erosion Hazard (Road/Trail)**
Displayed in MANU - Table FOR-2. Forestland Management w/fuzzy rating

2/ FOR - POTENTIAL EROSION HAZARD (ROAD/TRAIL)

Refer to section 537 of the National Forestry Manual for specific soil rating criteria.

Description:

The hazard or risk of soil loss from unsurfaced roads/trails. Refer to the National Forestry Manual for soil rating criteria.

Ratings assess:

- * The force that natural precipitation events have to dislodge and move soil materials on roads/trails and firebreaks.
- * Activities on roads and trails that result in bare ground, compaction, and reshaping of the soil surface.

Displayed in * Use by trucks, skidders, off-road vehicles and other similar equipment. MANU - Table FOR-2. Forestland Management w/fuzzy rating

- * The impact on compacted, bare road/trail surface using the representative value for slope gradient of the soil component

Ratings assume:

- * Roads and trails are generally linear, continuous, and narrow ranging up to 25 feet in width.

Ratings do not assess:

- * Frozen or snow-covered soil.

Rating Classes (Crisp):

- * No Erosion Hazard - There is no erosion hazard associated with this activity.
- * Slight - Little or no erosion is likely.
- * Moderate - Some erosion is likely; occasional maintenance may be needed; simple erosion control measures needed.
- * Severe - Significant erosion can be expected; roads require frequent maintenance; costly erosion control measures are needed

Interpretation Name: **FOR - Potential Fire Damage Hazard**

Displayed in MANU - Table FOR-5. Forestland Management w/fuzzy rating

3/ FOR - POTENTIAL FIRE DAMAGE HAZARD

Refer to section 537 of the National Forestry Manual for specific soil rating criteria.

Description:

The potential hazard of damage to soil nutrient, physical, and biotic characteristics from fire.

Ratings assess:

- * The impact of fires (prescribed or wildfire) of moderate fireline intensity (116-520 btu's/sec/ft) that provide the necessary heat to remove the duff layer and consume soil organic matter in the surface layer.

Ratings assume:

- * Soils with a shallow surface layer lack the capacity to safely absorb the effects of fire.
- * Steep slopes are more likely to erode if the protective duff layer is removed.
- * Soil texture and rock fragment content relate to soil erodibility, vegetative recovery rate, and vegetative productivity.

** Medium textured soils, with their greater inherent water holding capacity, are more likely to be cooler and provide higher productivity potential*

**Soils with large volumes of rock fragments transmit heat to a greater depth in a shorter period of time.*

** Soils with less than 2 percent organic matter are more resistant to sheet and rill erosion and have greater water holding capacity.*

Ratings do not assess:

** The time of year in which the fire occurs (winter versus summer).*

** Fuel moisture content or volume.*

** Whether conditions*

Rating Classes (Crisp):

**None - No impact to the soil characteristics are expected.*

** Low - Little negative impact to the soil characteristics are expected.*

** Moderate - Negative impacts to the soil characteristic may occur.*

** High - Negative impact to the soil characteristics are expected.*

Interpretation Name: **FOR - Potential Seedling Mortality**

Displayed in MANU - Table FOR-5. Forestland Management w/fuzzy rating

4/ FOR - POTENTIAL SEEDLING MORTALITY

Refer to section 537 of the National Forestry Manual for specific soil rating criteria.

Description:

The likelihood of death of naturally or artificially propagated tree seedlings, as influenced by soil characteristic, physiographic features and climatic conditions.

Ratings assess:

** The impact of soil, physiographic, and climatic conditions on the survivability of newly established tree seedlings*

Ratings assume:

** Site preparation is adequate for the establishment of tree seedlings.*

** Artificially propagated tree seedlings are of adequate size and quality, are adapted to the site, are planted during a time sufficient to assure initial root growth with respect to moisture and temperature, and proper planting techniques are employed.*

** Near normal monthly and yearly climatic conditions.*

Ratings do not assess:

** Effects of overstory tree canopy greater than 15 feet in height.*

** Effects of adjacent competing plants less than 15 feet in height.*

** Effects of seedling pests (rodent, herbivore, insect, etc.).*

Rating Classes (Crisp):

Low - Seedlings are expected to develop normally and become established.

Moderate - Root development is sufficiently retarded to cause death of some seedlings (up to 1 in 3) and establishment of surviving seedlings is delayed.

High - Seedlings are not expected to survive (at least 2 in 3 die) without special treatment or management.

Interpretation Name: **FOR - Road Suitability (Natural Surface)-ID,OR,WA**
Displayed in

5/ FOR - ROAD SUITABILITY (NATURAL SURFACE)

Refer to section 537 of the National Forestry Manual for specific soil rating criteria. This interpretation is used for use in ID,OR,WA.

Description:

Suitability for using the natural surface of the soil component for roads by trucks for the transport of logs and other wood products from the site.

Ratings assess:

- * The efficient and safe transport of forest products from the site.*
- * The landscape in its natural setting.*
- * Frequency and duration of flooding, ponding and depth and duration of water table.*
- * The use of trucks (1/2-ton to log-transport capability).*
- * Activities that disturb 100 percent of the soil surface area with rutting, puddling or displacement up to a depth of 18.*

Ratings assume:

- * Vegetation and debris is cleared from an area sufficient in width for the road before use begins.*
- * Using the natural setting of the soil without cut and fill construction.*
- * Slopes are less than 20 percent gradient.*
- * Use occurs during customary periods of such activity for the local area.*
- * Roads are generally less than 1 mile in length with up to a 20-foot wide running surface.*

Ratings do no assess:

- * Non-soil obstacles, e.g., slash.*
- * Frozen or snow-covered soils.*

Rating Classes (Crisp):

- * Suited - Little or no restrictions to natural road suitability.*
- * Moderately Suited - One or more restrictions reduce site suitability.*
- * Poorly Suited - One or more restrictions generally make the use of the site for a natural road very difficult or unsafe.*

Interpretation Name: **FOR - Soil Rutting Hazard**
Displayed in **MANU - Table FOR-1. Forestland Management w/fuzzy rating**

6/ FOR - SOIL RUTTING HAZARD

Refer to section 537 of the National Forestry Manual for specific soil rating criteria.

Description:

Ratings indicate the hazard or risk of ruts in the uppermost soil surface layers by operation of forest equipment. Soil displacement and puddling (soil deformation and compaction) may occur simultaneously with rutting.

Ratings assess:

- * The operation of equipment on forest sites (3-10 passes) when the soil moisture is near field capacity.
- * The use of standard rubber-tired vehicles (non-flotation tires).
- * Year-long water tables < 12.
- * Soil displacement and puddling which may affect aesthetics, groundwater hydrology, and productivity of the site.

Ratings assume:

- * Rutting depths usually range from 2 to 24 and depends, in part, on the weight of equipment (including carried or pulled loads) and shape and size of wheels.
- * Lack of organic/vegetation surface cover.
- * Conditions occurs on soil with slopes and other characteristics that allow use of ground-based equipment.

Ratings do not assess:

- * Impacts of rutting on sloping sites that may channel surface water and affect hydrology.
- * Frozen soil within 24 of the surface.

Rating Classes (Crisp):

- * Slight - Little or no rutting.
- * Moderate - Ruts are likely.
- * Severe- Ruts readily.