

Soils Summary Grid

A condensed summary of characteristic, field-observable soil properties of Soil Series by Parent Material
Colville Indian Reservation, Okanogan & Ferry Counties, Washington

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GRANITIC ROCK		Range Soils		GRANITIC ROCK		Forest Soils		
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric		
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT		
20 - 30" PPT								
10 - 20" DEEP (SHALLOW)	SOAPLAKE <i>Residuum, grus inclusions</i> Loamy, mixed, mesic Lithic Haploxerolls	TYEE ¹ <i>Residuum</i> Loamy, mixed, mesic shallow Ultic Haploxerolls	SKANID ² <i>Grus</i> Loamy-skeletal, mixed, mesic shallow Entic Ultic Haploxerolls					
	COULEEDAM <i>Residuum, grus inclusions</i> Loamy-skeletal, mixed, mesic Lithic Haploxerolls	SWAKANE 12 - 16" PPT <i>Residuum</i> Lo-skeletal, mixed, mesic Lithic Ultic Haploxerolls	SWAKANE 12 - 16" PPT <i>Residuum</i> Lo-skeletal, mixed, mesic Lithic Ultic Haploxerolls	CHUMSTICK 20 - 28" PPT <i>Residuum</i> Loamy-skeletal, mixed, frigid Lithic Ultic Haploxerolls				
20 - 40" DEEP (MODERATELY DEEP)	ROOSEVELT <i>Residuum, grus inclusions</i> Coarse-loamy, mixed, mesic Aridic Haploxerolls	GINNIS <i>Grus (weathered bedrock)</i> Coarse-loamy, mixed, mesic Ultic Haploxerolls	SPOKANE ² <i>Grus</i> Coarse-loamy, mixed, mesic Ultic Haploxerolls	^CENTRALPEAK ³ 16 - 25" PPT <i>Grus; colluv, resid fr granitic or porphyritic volc rxs</i> Coarse-loamy, mixed, frigid Andic Xerochrepts				
		MORICAL <i>Grus (residuum, colluvium)</i> Fine-loamy, mixed, mesic Ultic Argixerolls		^MOSCOW ³ 18 - 25" PPT <i>Grus</i> Coarse-loamy, mixed, frigid Andic Xerochrepts	^MOSES 25 - 35" PPT <i>Grus (weathered bedrock, paralthic contact)</i> Loamy-skeletal, mixed Andic Cryochrepts			
		WYNHOFF <i>Residuum, colluvium from granitic rock, rhyodacite porphyry and soft metamorphic rocks</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls	VANBRUNT 14 - 20" PPT <i>Residuum</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls		MINERAL 17 - 25" PPT <i>Residuum</i> Loamy-skeletal, mixed, frigid Ultic Haploxerolls			
					^CAPOOSE 18 - 25" PPT <i>Residuum</i> Ashy over loamy-skeletal, mixed, frigid Typic Vitrandepts	^BUHRIG <i>Residuum, colluvium from granitic or meta rxs.</i> Loamy-skeletal, mixed Andic Cryochrepts		
40 - 60" DEEP (DEEP)		ANNUM <i>Grus</i> Fine-loamy, mixed, mesic Ultic Argixerolls	GEORGE CREEK <i>Grus</i> Fine-loamy, mixed, mesic Ultic Argixerolls	DINKLEMAN 15 - 18" PPT <i>Grus</i> Coarse-loamy, mixed, frigid Ultic Haploxerolls				
				^CANTEN 18 - 25" PPT <i>Grus</i> Coarse-loamy, mixed, frigid Andic Xerochrepts	^CODYLAKE <i>Grus</i> Ashy over loamy, mixed Entic Cryandeps			
> 60" DEEP (VERY DEEP)	¹ Has cambic horizon and is taxadjunct to the series.		HELLGATE <i>Grus</i> Coarse-loamy, mixed, mesic Ultic Haploxerolls	^BRUSHER ⁴ 16 - 25" PPT <i>Colluv., residuum fr granitic or porphyritic volc rxs</i> Fine-loamy, mixed, frigid Ultic (Andeptic) Haploxeralfs				
	² Includes two phases of the series based on potential evapotranspiration.			^FRIEDLANDER ⁴ 18 - 22" PPT <i>Residuum, some colluv. fr. granitic and meta rxs</i> Fine, mixed, frigid Ultic (Andeptic) Palexeralfs <i>has 7-14" thick ash mantle</i>				
	³ Moscow and Centralpeak are differentiated at series level by number of days moisture control section is dry (Moscow: 45-60 days; Centralpeak: 60-75 days); they are exact counterparts in different plant associations (Moscow: grand fir PAGs on Rez, western hemlock PAGs in counties to east; Centralpeak: D-fir PAGs). Centralpeak is old Moscow High PE.		WHITESTONE <i>Colluvium and till from granitic rock</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls	BEARSPRING ⁵ 15 - 20" PPT <i>Colluvium</i> Loamy-skeletal, mixed, frigid Ultic Haploxerolls	^OHSCOW 20 - 25" PPT <i>Colluvium</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts			
	⁴ Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name. Brusher has thick ash mantle (>14" thick).				^KELLERBUTTE 18 - 25" PPT <i>Colluvium over grus or residuum</i> Ashy / loamy-skel., mixed, frigid Typic Vitrandepts	^TOGO ⁶ <i>Colluvium</i> Ashy / loamy-skeletal, mixed Entic Cryandeps		
	⁵ Incorrectly indicated as 'mesic' in soil survey report and some other sources; was mapped as 'frigid' counterpart to Whitestone series and occurs in D-fir PAGS; is indicated as 'frigid' on NRCS web site.			XEROCHREPTS 17 - 25" PPT <i>Very deep, well-drained in colluvium on 40-90% mount. backslashes; may have ash cap (up to 7-14" thick); particle-size control section is 3-15% clay, 35-90% rock fragments.</i>	XEROCHREPTS 17 - 25" PPT <i>Very deep, well-drained in colluvium on 40-90% mount. backslashes; may have ash cap (up to 7-14" thick); particle-size control section is 3-15% clay, 35-90% rock fragments.</i>	XEROCHREPTS 17 - 25" PPT <i>si. loam, loam surf. / loam, sandy loam subsoil;</i>		
	⁶ Reclassified to 'ashy' from 'medial' based on lab data.							
ABBREVIATION: pscs = soil particle-size control section								
SOILS DEVELOPED FROM GRANITIC ROCK HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE WELL DRAINED UNLESS NOTED OTHERWISE.								

ACID VOLCANIC ROCK		Range Soils		ACID VOLCANIC ROCK		Forest Soils	
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT	
						CRYIC Xeric	
						20 - 30" PPT	
10 - 20" DEEP (SHALLOW)						LITHIC XERORTHENTS 15 - 20" PPT <i>Colluv., resid. fr. acid volc. rocks with some till</i> Very shallow (< 10" deep); soil profile is l / ls, s; pscs is 8-18% clay and 15-60% rock fragments.	
		JOHNTOM 14" - 20" PPT <i>Colluvium, residuum</i> Loamy-skeletal, mixed, mesic Lithic Haploxerolls		JOHNTOM 14 - 20" PPT <i>Colluvium, residuum</i> Loamy-skeletal, mixed, mesic Lithic Haploxerolls		BALDKNOB 15 - 22 " PPT <i>Colluvium, residuum</i> Loamy-skeletal, mixed, frigid Lithic Ultic Haploxerolls	
20 - 40" DEEP (MODERATELY DEEP)						^CENTRALPEAK ¹ 16 - 25" PPT <i>Grus; colluv./residm fm. granitic or porphyr. volc rxs</i> Coarse-loamy, mixed, frigid Andic Xerochrepts Soils developed from granitic and porphyritic volcanic rock have similar textures.	
		WYNHOFF <i>Colluvium, residuum from granitic rock, rhyodacite porphyry and soft metamorphic rocks</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls		NORTHSTAR 14 - 20" PPT <i>Colluvium, residuum</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls		THOUT 15 - 20" PPT <i>Colluvium, residuum</i> Loamy-skeletal, mixed frigid Typic Xerochrepts <i>with thin A horizon; some profiles have ash mantle</i>	
40 - 60" DEEP (DEEP)							
> 60" DEEP (VERY DEEP)						^BRUSHER ² 16 - 25" PPT <i>Colluv., residuum fr granitic or porphyritic volc rxs</i> Fine-loamy, mixed, frigid Ultic (Andeptic) Haploxerafbs <i>has >14" thick ash mantle</i>	
				LOUIECREEK 14 - 20" PPT <i>Colluvium</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls		SCOAP 18 - 22" PPT <i>Till and colluvium from acid volcanic and meta rxs</i> Lo-skeletal, mixed, frigid Pachic Ultic Haploxerolls	
						^INKLER 16 - 25" PPT <i>Till and colluvium from acid volcanic and meta rxs</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts <i>with thin A horizon</i>	
				XEROCHREPTS 17 - 25" PPT <i>Very deep, well-drained in colluvium on 40-90% mount. backslopes; may have ash cap (up to 7-14" thick); particle-size control section is 3-15% clay, 35-90% rock fragments.</i>		XEROCHREPTS 17 - 25" PPT <i>si. loam, loam surf. / loam, sandy loam subsoil;</i>	XEROCHREPTS 17 - 25" PPT
<p>¹ Moscow and Centralpeak are differentiated at series level by number of days moisture control section is dry (Moscow: 45-60 days; Centralpeak: 60-75 days); they are exact counterparts in different plant associations (Moscow: grand fir PAG on Rez, western hemlock PAG in counties to east; Centralpeak: D-fir PAG). Centralpeak is old Moscow High PE.</p> <p>² Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name.</p> <p>ABBREVIATION: pscs = soil particle-size control section</p> <p>SOILS DEVELOPED FROM ACID VOLCANIC ROCK HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE WELL DRAINED UNLESS NOTED OTHERWISE.</p>							

METAMORPHIC ROCK		Range Soils		METAMORPHIC ROCK		Forest Soils			
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric			
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT			
10 - 20" DEEP (SHALLOW)				RUFUS ¹ 14 - 22" PPT <i>Colluvium & till from metaseds to schist facies</i> Lo-skeletal, mixed, mesic Lithic Ultic Haploxerolls					
20 - 40" DEEP (MODERATELY DEEP)		WYNHOFF <i>Residuum, colluvium from granitic rock, rhyodacite porphyry and soft metamorphic rocks</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls		RAISIO ^{1, 2} 14 - 22" PPT <i>Colluvium & till from metaseds to schist facies</i> Lo-skeletal, mixed, mesic Entic Ultic Haploxerolls		KENOTRAIL 18 - 22" PPT <i>Serpentinitic, talc & some greenstone</i> Fine-loamy, serpentinitic, frigid Mollic Haploxerafls ARENHA ³ 20 - 22" PPT <i>Colluv, resid. fr. limestone, marble & calc metaseds</i> Fine, mixed, frigid Ultic (Andeptic) Haploxerafls <i>has 7-14" thick ash mantle</i> HARTILL ⁴ 18 - 25" PPT <i>Residuum and colluvium from sedimentary and metamorphic rxs; shale, schist, or quartzite</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts OXERINE ^{1, 4} 18 - 25" PPT <i>Residuum, colluv. from sedimentary and metam rxs; shale thru granitic facies</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts <i>with thin A horizon</i> Hartill and Oxerine are similar		ABUHRIG 22 - 25" PPT <i>Residuum, colluv. from granitic or metam rxs.</i> Loamy-skeletal, mixed Andic Cryochrepts	
40 - 60" DEEP (DEEP)						HENNEWAY ³ 18 - 25" PPT <i>Phyllite, black metacarbonates & reddish conglom.</i> Fine-loamy, mixed, frigid Ultic (Andeptic) Haploxerafls <i>has 7-14" thick ash mantle</i>			
> 60" DEEP (VERY DEEP)		¹ Parent material rocks may include shale, argillite, phyllite, quartzite, slate, schist and gneiss. Soils developed from metasedimentary rocks have channery, not subrounded or subangular, rock fragments. ² Has a cambric horizon and is a taxadjunct to the series. ³ Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name. ⁴ Hartill and Oxerine soils have inclusions with higher pH developed from limestone, marble, calc metarxs. Hartill and Oxerine are differentiated at series level by number of days moisture control section is dry (Hartill: 45-60 days; Oxerine: 60-75 days); they are exact counterparts in different plant associations (Hartill: grand fir PAGs on Rez, western hemlock PAGs in counties to east; Oxerine: D-fir PAGs). ⁵ Has inclusions of soils developed from greenstone, serpentinite and talc (e.g. Wells creek #511). ABBREVIATION: pscs = soil particle-size control section SOILS DEVELOPED FROM METAMORPHIC ROCK HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE WELL DRAINED UNLESS NOTED OTHERWISE.		BORGEAU <i>Colluvium & till from metamorphic rocks</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls DEHART <i>Colluvium & some till from metamorphic rocks</i> Loamy-skeletal, mixed, mesic Tyoic Xerochrepts <i>with thin A horizon</i>		FRIEDLANDER ³ 18 - 22" PPT <i>Residuum, some colluv. fr. granitic and metam rxs</i> Fine, mixed, frigid Ultic (Andeptic) Palexerafls <i>has 7-14" thick ash mantle</i> WELLS CREEK ^{1, 5} 18 - 25" PPT <i>Colluvium from metaseds to schist facies</i> Loamy-skeletal, mixed, frigid Ultic Haploxerolls WELLS CREEK #511 18 - 25" PPT <i>Colluvium from greenstone, serpentinite & talc</i> Loamy-skeletal, mixed, frigid Ultic Haploxerolls WILMONT ¹ 18 - 25" PPT <i>Colluvium from metaseds to schist facies</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts SCOAP 18 - 22" PPT <i>Till and colluv. from acid volcanic and metam rxs</i> Lo-skeletal, mixed, frigid Pachic Ultic Haploxerolls INKLER 16 - 25" PPT <i>Till and colluv. from acid volcanic and metam rxs</i> Loamy-skeletal, mixed, frigid Andic Xerochrepts <i>with thin A horizon</i>		GROWDEN 25 - 30" PPT <i>Colluvium & till from schist & quartzite</i> Loamy-skeletal, mixed Andic Cryumbrepts	
				XEROCHREPTS 17 - 25" PPT <i>Very deep, well-drained in colluvium on 40-90% mount. backslopes; may have ash cap (up to 7-14" thick); particle-size control section is 3-15% clay, 35-90% rock fragments.</i>		XEROCHREPTS 17 - 25" PPT <i>si. loam, loam surf. / loam, sandy loam subsoil;</i>			

GLACIAL TILL		Range Soils		GLACIAL TILL		Forest Soils			
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric		CRYIC Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT		20 - 30" PPT	
7 - 14" ASH MANTLE	TORRIORTHENTS			BERNHILL	STAPALOOP 16 - 25" PPT				
	Very deep, well drained on highly dissected, eroded 25-70% backslopes of glacial till hills; soil profile is loam / loam, (fine)sandy loam and is mildly to strongly alkaline; pscs has 25-50% rock fragments.			Fine-loamy, mixed, mesic Ultic Haploxeralfs	Till, glaciofluvial material				
7 - 14" ASH MANTLE				DEHART	DEHART				
				Colluvium & till from metamorphic rocks Loamy-skeletal, mixed, mesic Tyoic Xerochrepts with thin A horizon (Mollisol essentially)	Coarse-loamy, mixed, frigid Typic Xerochrepts				
7 - 14" ASH MANTLE				HUDNUT	HUDNUT				
				Ablation till, outwash (, glaciofluvial); Coarse-loamy, mixed, mesic Typic Xerochrepts very similar to Kartar with 15-35% rock fragments in pscs, but sandy loam / sand contact is >40" deep					
7 - 14" ASH MANTLE				Aits and Apex are similar	Aits and Apex are similar				
				Aits has Grand Fir; Apex in D.fir-ninebark PAGS. Depth classes are different.					
7 - 14" ASH MANTLE				Merkel and Inkler are similar	Merkel and Inkler are similar				
				Merkel: 1-5% clay + granitic rock frags in pscs; Inkler: 7-18% clay + volc./meta rock frags in pscs. Merkel is mod. deep, Inkler is v. deep to dense till					
7 - 14" ASH MANTLE				Inkler and Newbell are similar	Inkler and Newbell are similar				
				Inkler: >15% rx frags in B horizon; solum >14" thick. Newbell: <15% rx frags in B horizon; solum <14" thick. Newbell is mod. deep, Inkler is v.deep to dense till					
7 - 14" ASH MANTLE				Merkel and Newbell are similar	Merkel and Newbell are similar				
				Newbell has a thicker ash mantle					
7 - 14" ASH MANTLE				^APEX 15 - 22" PPT	^APEX 15 - 22" PPT				
				Coarse-loamy, mixed, frigid Andic Xerochrepts Moderately deep (20-40") to dense glacial till.					
7 - 14" ASH MANTLE				^AITS 20 - 25" PPT	^AITS 20 - 25" PPT				
				Coarse-loamy, mixed, frigid Andic Xerochrepts Mod.deep-very deep to dense glacial till					
7 - 14" ASH MANTLE				^MERKEL 18 - 25" PPT	^MERKEL 18 - 25" PPT				
				Loamy-skeletal, mixed, frigid Andic Xerochrepts Mod.deep to granitic till; thin ash cap (usu.<7" thick)					
7 - 14" ASH MANTLE				^NEWBELL ¹ 19 - 24" PPT	^NEWBELL ¹ 19 - 24" PPT				
				Loamy-skeletal, mixed, frigid Andic Xerochrepts Mod.deep to dense (granitic) glacial till w/ sand + silt					
7 - 14" ASH MANTLE				^INKLER 16 - 25" PPT	^INKLER 16 - 25" PPT				
				Till and colluv. from acid volcanic and metam rxs Loamy-skeletal, mixed, frigid Andic Xerochrepts					
7 - 14" ASH MANTLE				^SITDOWN 20 - 25" PPT	^SITDOWN 20 - 25" PPT				
				Outwash (till) SW excessively drained Sandy-skeletal, mixed Andic Cryochrepts may include till; pscs is 35-60% rock fragments					
> 14" ASH MANTLE	¹ Has a 10-18" thick ash mantle and is a taxadjunct to the series. Though pedons with an ash cap > 14" are outside the range for the series, this difference does not significantly affect use and management.			^LOONY ² 18 - 25" PPT	^LOONY ² 18 - 25" PPT				
	² Reclassified from Typic Vitrandepts to Typic Haploxerands according to revised taxonomic system.			Ashy over loamy, mixed, frigid Typic Vitrandepts Mod. deep to dense glacial till; mod. well drained					
> 14" ASH MANTLE	³ If 'ashy' contrasting family were recognized, this soil would classify as 'ashy', not 'medial'.			^LOUPLOUP ² 17 - 25" PPT	^LOUPLOUP ² 17 - 25" PPT				
	ABBREVIATION: pscs = soil particle-size control section			Ashy over loamy, mixed, frigid Typic Vitrandepts Deep (40-60") to dense glacial till					
> 14" ASH MANTLE	SOILS DEVELOPED FROM GLACIAL TILL HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE MOSTLY VERY DEEP (>60") AND WELL DRAINED UNLESS NOTED OTHERWISE. SOILS <60" DEEP HAVE DENSIC TILL MATERIAL OR A DURIPAN IN THE SUBSTRATUM.			Koepke and Barnellcreek are similar	Koepke and Barnellcreek are similar				
				Both soils are deep (40-60") to dense glacial till. Koepke is well drained, Barnellcreek is moderately well drained, seeped. Plant association groups (PAGs) are different.					
> 14" ASH MANTLE				^BARNELLCREEK ² 18 - 25" PPT	^BARNELLCREEK ² 18 - 25" PPT				
				Ashy / loamy, mixed, frigid Mollic Vitrandepts; Deep Moderately well-drained					
> 14" ASH MANTLE				Nevine and Elbowlake are similar	Nevine and Elbowlake are similar				
				Elbowlake has channery rock fragments + more clay and silt in the subsoil.					
> 14" ASH MANTLE				^NEVINE ² 16 - 24" PPT	^NEVINE ² 16 - 24" PPT				
				Ashy / loamy-skeletal, mixed, frigidTypic Vitrandepts Moderately deep (20-40") to dense glacial till					
> 14" ASH MANTLE				^ELBOWLAKE ² 18 - 24" PPT	^ELBOWLAKE ² 18 - 24" PPT				
				Ashy / loamy-skeletal, mixed, frigidTypic Vitrandepts Moderately deep to dense glacial till primarily from metamorphic rxs; 12-18% clay in subsoil					
> 14" ASH MANTLE				^STEPSTONE ^{2,3} 18 - 25" PPT	^STEPSTONE ^{2,3} 18 - 25" PPT				
				Medial over sandy or sandy-skeletal, mixed, frigid Typic Vitrandepts l / sl / ls subsoil; pscs is 35-60% rock fragments					
> 14" ASH MANTLE				^MANLEY	^MANLEY				
				Ashy / loamy-skeletal, mixed Entic Cryandeps Moderately deep (20-40") to dense glacial till					
> 14" ASH MANTLE				^RESNER ³	^RESNER ³				
				Outwash (till) from granitic rock Medial / sandy or s-skel, mixed Entic Cryandeps 14-25" ash cap; pscs is >35% rock fragments					

GLACIAL TILL		Range Soils (Continued)		GLACIAL TILL		Forest Soils (Continued)			
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric		CRYIC Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT		20 - 30" PPT	
10 - 20" MOLLIC EPIPEDON	MALOTT	CONCONULLY	DONAVAN	REPUBLIC 15 - 18" PPT	Republic and Lostcreek are similar Republic is well drained				
	Co-loamy, mixed, mesic Calciorthidic Haploxerolls <i>Deep (40-60") to a duripan; 5-30% rock fragments in pscs; vfs/ fsl / sl textures.</i>	Coarse-loamy, mixed, mesic Ultic Haploxerolls <i>Moderately deep (20-40") to dense glacial till</i>	Coarse-loamy, mixed, mesic Ultic Haploxerolls <i>Moderately deep (20-40") to dense glacial till</i>	Coarse-loamy, mixed, frigid Ultic Haploxerolls					
	STUBBLEFIELD	DISAUTEL	WHITESTONE	LOSTCREEK 15 - 18" PPT					
	Loamy-skeletal, mixed, mesic Orthidic Durixerolls <i>Moderately deep (20-40") to a duripan / dense glacial till</i>	Coarse-loamy, mixed, mesic Calcic Haploxerolls <i>Moderately deep (20-40") to dense glacial till</i>	<i>Colluvium and till from granitic rock</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls	<i>Glacial till and alluvium</i> Coarse-loamy, mixed, frigid Ultic Haploxerolls <i>Moderately well drained</i>					
HEYTOU	WANNACOTT	BORGEAU	NEUSKE ¹ 18 - 25" PPT						
Lo-skeletal, mixed, mesic Calciorthidic Haploxerolls <i>Mod. deep to dense till; basalt rock frags in pscs.</i>	<i>Glacial till and lake sediment, intermixed</i> Fine-silty, mixed, mesic Calcic Argixerolls <i>Moderately deep (20-40") to dense glacial till</i>	<i>Colluvium and till from metamorphic rocks</i> Loamy-skeletal, mixed, mesic Ultic Haploxerolls	Fine-loamy, mixed, frigid Mollic Haploxerolls <i>Deep (40-60") to dense glacial till</i>						
PESHASTIN		GLENROSE 17 - 20" PPT	OMAK						
Lo-skeletal, mixed, mesic Calciorthidic Haploxerolls <i>Very deep on moraines and terraces; mostly granite, schist, gneiss rock fragments in pscs.</i>		Fine-loamy, mixed, mesic Ultic Argixerolls	<i>Intermixed glaciolacustrine sediments + glacial till</i> Fine, mixed, mesic Typic Durixerolls <i>Moderately deep to duripan; mod. well drained; > 35% clay in pscs</i>						
>20" MOLLIC EPIPEDON		TIMENTWA	STEVENS						
		Coarse-loamy, mixed, mesic Calcic Pachic Haploxerolls <i>Deep to a duripan</i>	Co-loamy, mixed, mesic Pachic Ultic Haploxerolls <i>Moderately deep (20-40") to dense glacial till</i>						
			GOLDLAKE						
			SCOAP 18 - 22" PPT						
			Co-loamy, mixed, mesic Pachic Ultic Haploxerolls <i>Deep (40-60") to dense glacial till; Moderately well drained</i>	<i>Till and colluvium from acid volcanic and meta rxs</i> Loamy-skeletal, mixed, frigid Pachic Ultic Haploxerolls					
¹ Includes loamy-skeletal inclusions (Neuske Variant) without a mollic epipedon. ABBREVIATION: pscs = soil particle-size control section SOILS DEVELOPED FROM GLACIAL TILL HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE MOSTLY VERY DEEP (>60") AND WELL DRAINED UNLESS NOTED OTHERWISE. SOILS <60" DEEP HAVE DENSIC TILL MATERIAL OR A DURIPAN IN THE SUBSTRATUM.									

GLACIAL OUTWASH Mesic ARIDIC		Range Soils Mesic XERIC	GLACIAL OUTWASH MESIC Xeric	Forest Soils FRIGID Xeric	CRYIC Xeric
9 - 12" PPT		12 - 15" PPT	14 - 18" PPT	15 - 25" PPT	20 - 30" PPT
< 7" ASH MANTLE	QUINCY Mixed, mesic Xeric Torripsamments <i>Fine sand; excessively drained</i>	EWALL Mixed, mesic Typic Xeropsamments <i>Excessively drained</i>	BISBEE Mixed, mesic Typic Xeropsamments <i>Fine sand SW excessively drained</i>	SACHEEN 16 - 20" PPT Mixed, frigid Typic Xeropsamments <i>SW excessively drained</i>	
	WINCHESTER Mixed, mesic Xeric Torripsamments <i>Coarse sand; excessively drained</i>	Bisbee and Dart are similar Quincy and Winchester are similar	DART Mixed, mesic Typic Xeropsamments <i>Fine, med. and co. sand SW excess. dr.</i>	KARAMIN 18 - 25" PPT Sandy, mixed, frigid Typic Xerochrepts <i>f. sandy loam / loamy f. sand / lo. sand; <10% r. frags</i>	Karamin and Torboy are similar
	SKAHA Sandy-skeletal, mixed, mesic Xeric Torriorthents <i>Excessively drained</i>	Kartar, Hudnut and Scala are all similar. Hudnut similar to Kartar w/ 15-35% rx frags in pscs but sl / s contact is >40" deep; Kartar is ~ 'sandy'.	KARTAR Coarse-loamy, mixed, mesic Typic Xerochrepts <i>sl / s at 20-30"; 15-35% rock fragments in pscs</i>	TORBOY 18 - 25" PPT Sandy, mixed, frigid Typic Xerochrepts <i>fsl / s; 15-35% rock fragments in pscs; some ash</i>	
	XERIC TORRIORTHENTS <i>Terraces and terrace escarpments; 0 - 65% slopes. Parent material is commonly mixed and is stratified (outwash usu. stratif.); soil profile is sl, ls / sicl to s (C horizon varies sicl to xgr. sand, stratif. common); pscs is 2-15% clay, 15-60% rock fragments. Well to excessively drained</i>	Spens and Springdale are similar	HUDNUT <i>Ablation till, outwash (, glaciofluvial); Coarse-loamy, mixed, mesic Typic Xerochrepts</i>	WAPAL 16 - 24" PPT Sandy-skeletal, mixed, frigid Typic Xerochrepts <i>Somewhat excessively drained</i>	
			SPRINGDALE Sandy-skeletal, mixed, mesic Typic Xerochrepts <i>sandy loam / extr. grv. sand SW excess. dr.</i>		
			SPENS Sandy-skeletal, mixed, mesic Typic Xerorthents <i>extr. grv. lo. sand / extr. grv. sand SW excess. dr.</i>	^SCRABLERS 18 - 25" PPT Sandy, mixed, frigid Andic Xerochrepts	^SITDOWN 20 - 25" PPT S-skel, mixed Andic Cryochrepts SW exc. dr. <i>may include till; pscs is 35-60% rock fragments</i>
			^HALLCREEK Sandy-skeletal, mixed, mesic Andic Xerochrepts <i>SW excessively drained</i>	^GODDARD ⁴ 16 - 19" PPT Sandy-skeletal, mixed, frigid Andic Xerochrepts	^TUNKCREEK 22 - 28" PPT Coarse-loamy over sandy or sandy-skeletal, mixed Andic Cryochrepts <i>14-20" ash cap; fsl / ls, s; pscs is 0 to 20% rock fragments</i>
			^MITCHELLPOINT ³ 17 - 19" PPT <i>Ash / glaciofluvial material / outwash Fine-loamy over sandy or sandy-skeletal, mixed, mesic Ultic (Andeptic) Haploxerafls CONTINUED TO LEFT</i>	^KIEHL ⁴ 18 - 25" PPT Sandy-skeletal, mixed, frigid Andic Xerochrepts	^RESNER ⁵ <i>Outwash (till) from granitic rock Medial over sandy or sandy-skeletal, mixed Entic Cryandepths 14-25" ash cap; pscs is >35% rock fragments</i>
		Ash mantle is 14-20" thick; sil / (l)s; upper pscs has 18-27% clay; lower pscs is 35-60% rock fragments.		^PARMENTER ⁵ 15 - 22" PPT <i>Outwash primarily from granitic rock Medial over sandy or sandy-skeletal, mixed, frigid Typic Vitrandepths pscs is >35% rock fragments</i>	
	> 14" ASH MANTLE	STRAT Loamy-skeletal, mixed, mesic Aridic Haploxerolls	FIVELAKES Loamy-skeletal, mixed, mesic Ultic Haploxerolls <i>(incl. moderately well drained phase)</i>	GARRISON Loamy-skeletal, mixed, mesic Ultic Haploxerolls	
AENEAS Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aridic Haploxerolls <i>f. sandy loam / sand subsoil, <10% rock fragments thruout profile</i>		HALEY Co-lo over sandy or sandy-skel., mixed, mesic Ultic Haploxerolls <i>fsl / ls, s; pscs is 0-5% rock frags</i>	BONG Sandy, mixed, mesic Ultic Haploxerolls <i>Somewhat excessively drained</i>		
POGUE Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aridic Haploxerolls <i>f. sandy loam / sandy loam / l. sand, sand subsoil, pscs is 35-70% rock fragments; Somewhat excessively drained</i>		HOBHILL ¹ Sandy, mixed, mesic Ultic Haploxerolls <i>Somewhat excessively drained</i>	Winthrop and Owhi are similar <i>Winthrop has more rx frags, sand closer to surface</i>		
		OWHI ² Sandy-skeletal, mixed, mesic Ultic Haploxerolls <i>A/B/C horizon</i>	WINTHROP 14 - 16" PPT <i>Mixed alluvium and glacial outwash Sandy-skeletal, mixed, mesic Entic Ultic Haploxerolls Alluvial fans, terraces; A / C horizon; Somewhat excessively drained</i>		
		WINTHROP 14 - 16" PPT <i>Mixed alluvium and glacial outwash Sandy-skeletal, mixed, mesic Entic Ultic Haploxerolls Alluvial fans, terraces; A / C horizon; Somewhat excessively drained</i>	WINTHROP 14 - 16" PPT <i>Mixed alluvium and glacial outwash Sandy-skeletal, mixed, mesic Entic Ultic Haploxerolls Alluvial fans, terraces; A / C horizon; Somewhat excessively drained</i>		
MOLLIC EPIPEDON (10 - 20" thick)					¹ Lacks a cambic horizon and is a taxadjunct to the series in this survey area. ² Originally classified as 'coarse loamy...'; some soils are coarse-loamy over sandy or sandy-skeletal. ³ Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name. ⁴ Kiehl and Goddard are differentiated at series level by number of days moisture control section is dry (Kiehl: 45-75 days; Goddard: 75-90 days); they are exact counterparts in different plant associations (Kiehl: D-fir/ninebark and grand fir PAGs (cool phase) on Rez; Goddard: D-fir/pinegrass PAG on Rez.). ⁵ If 'ashy' contrasting family were recognized, this soil would classify as 'ashy', not 'medial'. ABBREVIATION: pscs = soil particle-size control section SOILS DEVELOPED FROM GLACIAL OUTWASH HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE VERY DEEP (>60"); DRAINAGE CLASSES ARE VARIABLE, AND SOILS ARE WELL DRAINED UNLESS NOTED OTHERWISE.

		GLACIOFLUVIAL MATERIAL		GLACIOFLUVIAL MATERIAL		Forest Soils					
		Mesic ARIDIC		Range Soils Mesic XERIC		MESIC Xeric		FRIGID Xeric		CRYIC Xeric	
		9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT		20 - 30" PPT	
Non-Calcareous	MOLLIC EPIP.	CASHMERE Coarse-loamy, mixed, mesic Aridic Haploxerolls	PICARD Coarse-loamy, mixed, mesic Ultic Haploxerolls	PHOEBE Coarse-loamy, mixed, mesic Pachic Ultic Haploxerolls							
	OCHRIC EPIPEDON		Kartar, Hudnut and Scala are all similar	SCALA Coarse-loamy, mixed, mesic Typic Xerochrepts v. fine sandy loam, fine sandy loam and 0% rock fragments thruout profile. HUDNUT Ablation till, outwash (, glaciofluvial); Coarse-loamy, mixed, mesic Typic Xerochrepts 15-35% rock fragments in pscs so not really glaciofluvial. ^MITCHELLPOINT ¹ 17 - 19" PPT Ash / glaciofluvial material / outwash Fine-loamy over sandy or sandy-skeletal, mixed, mesic Ultic (Andeptic) Haploxerafls Ash mantle is 14-20" thick; sil / (l)s; upper pscs has 18-27% clay; lower pscs is 35-60% rock fragments.	STAPALOOP 16 - 25" PPT Till, glaciofluvial material Coarse-loamy, mixed, frigid Typic Xerochrepts v. fine sandy loam, fine sandy loam thruout profile, and <25% rock fragments in pscs.						
Calcareous	MOLLIC EPIPEDON	MALOTT Till (, glaciofluvial) Co-loamy, mixed, mesic Calciorthidic Haploxerolls 5-30% rock fragments in pscs, so not considered glaciofluvial by some; v fsl / fsl / sl subsoil; Deep (40-60") to duripan	Malott and Farrell are similar								
	OCHRIC EPIPEDON	FARRELL Coarse-loamy, mixed, mesic Calciorthidic Haploxerolls	DULEYLAKE Fine-loamy mixed, mesic Aquic (Calcic) Argixerolls Moderately well drained								

¹ Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name.

ABBREVIATION: pscs = soil particle-size control section

SOILS DEVELOPED FROM GLACIOFLUVIAL MATERIAL HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE VERY DEEP (>60") AND WELL DRAINED UNLESS NOTED OTHERWISE. SOILS <60" DEEP HAVE A DURIPAN IN THE SUBSTRATUM.

	GLACIOLACUSTRINE SEDIMENT Mesic ARIDIC	Range Soils Mesic XERIC	GLACIOLACUSTRINE SEDIMENT MESIC Xeric	Forest Soils FRIGID Xeric	CRYIC Xeric
< 18% CLAY in pscs	9 - 12" PPT ELLISFORDE Coarse-silty, mixed, mesic Calciorthidic Haploxerolls <i>Well drained</i>	12 - 15" PPT NESPELEM Coarse-silty, mixed, mesic Entic Durixerolls <i>Moderately deep to duripan; well drained</i> Swipkin and Incheilium are similar Both have 10-18% clay in pscs; Incheilium is glaciofluvial / glacial lake sediment	14 - 18" PPT SWIPKIN Coarse-silty, mixed, mesic Ultic Haploxerolls <i>Mollic epip. < 20" thick; well drained</i>	15 - 25" PPT LAKESOL 18 - 20" PPT <i>N-facing terrace escarpments, 30-65% slopes</i> Coarse-silty, mixed, frigid Ultic Haploxerolls <i>Many profiles average 16-22% clay in pscs;</i> <i>Well drained</i>	20 - 30" PPT
	18 - 35% CLAY in pscs	MONSE <i>Alluvium over glacial lake sediment</i> Fine-silty, mixed, mesic Aquic Haploxerolls <i>Moderately well drained</i>	WANNACOTT <i>Glacial till and lake sediment, intermixed</i> Fine-silty, mixed, mesic Calcic Argixerolls <i>Moderately deep (20-40") to dense glacial till;</i> <i>Well drained</i>	HUNTERS ¹ 15 - 19" PPT Fine-silty, mixed, mesic Calcic Haploxerolls <i>Well drained</i>	HADENCREEK 16" - 18" PPT Fine-silty, mixed, frigid Calcic Haploxerolls <i>Moderately well drained</i>
> 35% CLAY in pscs	RATLAKE 9 - 11" PPT <i>Glacial lake sediment and recent alluvium; closed depressions on valley flats;</i> Loamy, mixed (calcareous), mesic, shallow Typic Halaquepts <i>Shallow (10-20") to duripan; poorly drained</i>		CEDONIA Fine-silty, mixed, mesic Typic Xerochrepts <i>Most profiles average 16-22% clay in pscs;</i> <i>Well drained</i>	JIMCREEK 15 - 18" PPT <i>Glacial lake sediment and alluvium</i> Fine-silty, mixed, frigid Typic Argiaquolls <i>Somewhat poorly drained</i>	^LYNXCREEK Fine-silty, mixed Andeptic Cryoboralfs <i>Mod. well drained; has 7-14" thick ash mantle</i>
	ELVEDERE Fine, mixed, mesic Xerollic Paleargids <i>Well drained</i>		OMAK <i>Intermixed glaciolacustrine sediments + glacial till</i> Fine, mixed, mesic Typic Durixerolls <i>Moderately deep to duripan; mod. well drained</i>		
LEAHY <i>undulating lake terraces</i> Fine, mixed, mesic Typic Natrargids <i>Moderately well drained</i>		HODGSON Fine, mixed, mesic Mollic Palexeralfs <i>Moderately well drained</i>	KEWACH 15 - 18" PPT Fine, mixed, frigid Mollic Palexeralfs <i>Has thin mantle of volcanic ash and loess.</i> <i>Has inclusions of soil with ash cap [inclusions of Typic (Andeptic) Palexeralfs]; mod. well drained.</i>		

¹ Is coarse-silty and lacks secondary carbonates within 1.1 meters of the soil surface on the Rez; mapped as a taxadjunct to the series.

² Has an ash cap and would classify in the Andeptic subgroup if such were recognized. Use word 'Andeptic' in family name.

ABBREVIATION: pscs = soil particle-size control section

SOILS DEVELOPED FROM GLACIOLACUSTRINE SEDIMENT HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THE UPPER PART; SOME FOREST SOILS HAVE A DISTINCTIVE ASH MANTLE AS INDICATED BY ^ PRECEDING THE SOIL NAME. THE SOILS ARE VERY DEEP (>60") UNLESS NOTED OTHERWISE. SOILS <60" DEEP HAVE DENSIC MATERIAL OR A DURIPAN IN THE SUBSTRATUM. THE DRAINAGE CLASS IS AS INDICATED ABOVE.

LOESS, LOESS/BASALT, SILTSTONE OR OLD TILL		Range Soils		LOESS, LOESS/BASALT, SILTSTONE OR OLD TILL		Forest Soils	
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT	
10-20" DEEP (SHALLOW)		BAKEOVEN <i>Basalt</i> Loamy-skeletal, mixed, mesic Lithic Haploxerolls Very shallow (<10" deep)					
20-40" DEEP (MOD. DEEP)		ANDERS <i>Loess</i> Coarse-loamy, mixed, mesic Typic Haploxerolls					
40-60" DEEP (DEEP)		OLICAL¹ <i>Loess, material weathered from basalt</i> Coarse-silty, mixed, mesic Calcic Haploxerolls On mounds on basalt plateaus					
> 60" DEEP (VERY DEEP)		BADGE <i>Basalt colluvium and loess</i> Loamy-skeletal, mixed, mesic Typic Argixerolls				¹ Coarse-loamy and gravelly in lower part of control section and is taxadjunct to the series. Use and management is the same. ² Lacks secondary carbonates within 35" of the soil surface (depth to carbonates is too deep) and is a taxadjunct to the series. Use and management is the same. ABBREVIATION: pscs = soil particle-size control section ALL SOILS INDICATED ON THIS PAGE HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH IN THEIR UPPER PART AND ARE WELL DRAINED UNLESS NOTED OTHERWISE.	
		COLOCKUM <i>Loess / old glacial till</i> Fine-loamy, mixed, mesic Calcic Argixerolls					
		BROADAX <i>Loess</i> Fine-silty, mixed, mesic Calcic Argixerolls					
		ACHIMIN <i>Loess / siltstone</i> Fine, mixed, mesic Typic Palexerolls		REARDAN² <i>Loess</i> Fine, mixed, mesic Calcic Argixerolls			
		CALCIC PACHIC HAPLOXEROLLS <i>Loess-influenced slope alluvium over reworked glaciofluvial deposits; closed depressions.</i> Deep or very deep, moderately well drained, occurs in complex with Achimin soils on 3 - 30% slopes. >20" mollic epiped.; depth to secondary carbonates is 20-43"; soil profile is fsl, sil, sicl or l; pscs is co-l, co-si, f-si or f-lo and 0-25% rock fragments.					

		Range Soils		Forest Soils	
ALLUVIUM		Mesic XERIC		ALLUVIUM	
Mesic ARIDIC		Mesic XERIC		MESIC Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT	
				15 - 25" PPT	
				20 - 30" PPT	
SOMEWHAT EXCESSIVELY DRAINED	LOGY				ABBREVIATION: pscs = soil particle-size control section MOST MINERAL ALLUVIAL SOILS HAVE AN ADMIXTURE OF VOLCANIC ASH AND LOESS; SOME HAVE A SUBSTANTIAL COMPONENT OF ASH IN THE UPPER PART AS INDICATED BY % PRECEDING THE SOIL NAME. THE SOILS ARE VERY DEEP UNLESS NOTED OTHERWISE.
	<i>Alluvial fans; has two drainage classes</i> Lo-skel., mixed, mesic Torrifluventic Haploxerolls				
	TORRIFLUVENTIC HAPLOXEROLLS	WINTHROP 14 - 16" PPT	WINTHROP 14 - 16" PPT		
	<i>Stream terraces, excessively drained*</i> <i>ls / sl, ls, co.s; pscs is 2-10% clay, 0-65% rx frags.</i>	<i>Mixed alluvium and glacial outwash</i> Sandy-skeletal, mixed, mesic Entic Ultic Haploxerolls	<i>Mixed alluvium and glacial outwash</i> Sandy-skeletal, mixed, mesic Entic Ultic Haploxerolls		
	BEVERLY	<i>Alluvial fans, terraces; A / C horizon; sand closer to surface, more rock fragments vs. Owhi</i>	<i>Alluvial fans, terraces; A / C horizon; sand closer to surface, more rock fragments vs. Owhi</i>		
	<i>Alluvial Fans</i> Sandy-skeletal, mixed, mesic Xeric Torrifluvents				
WELL DRAINED	OKANOOGAN 8 - 11" PPT	REBECCA 11 - 15" PPT			
	Coarse-loamy, mixed, mesic Cumulic Haploxerolls	<i>Alluvial fans</i> Coarse-loamy, mixed, mesic Ultic Haploxerolls			
	CASHMONT				
	<i>Alluvial Fans</i> Coarse-loamy, mixed, mesic Aridic Haploxerolls				
	LOGY				
	<i>Alluvial fans; has two drainage classes</i> Loamy-skeletal, mixed, mesic Torrifluventic Haploxerolls				
MODERATELY WELL DRAINED		NARCISSE 12 - 18" PPT	NARCISSE 12 - 18" PPT	LOSTCREEK 15 - 18" PPT	
		<i>Low stream terraces, floodplains</i> Coarse-loamy, mixed, mesic Cumulic Haploxerolls	<i>Low stream terraces, floodplains</i> Coarse-loamy, mixed, mesic Cumulic Haploxerolls	<i>Alluvium and till on fans</i> Coarse-loamy, mixed, frigid Ultic Haploxerolls	
		POWEEN	Narcisse and Coxlake are similar Drainage classes are different	CUBCREEK 15 - 18" PPT	
		Poween and Narcisse are similar		<i>Stream terraces, floodplains</i> Co-loamy, mixed, frigid Fluvaquentic Haploxerolls	
		CUMULIC HAPLOXEROLLS		BOESEL 15 - 18" PPT	%CRYOFLUVENTS
	<i>Alluvial Fans;</i> > 24" mollic epipedon; <i>l, sl over l, s; pscs is 5-18% clay, 15-50% rock frags.</i>		<i>Stream terraces, floodplains</i> Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Cumulic Haploxerolls	<i>Alluvium mixed with volcanic ash, may have 7-20" thick volcanic ash influence in upper 30". Narrow floodplains, low terraces along mountain streams; sil, (s) / strat.vfsl to co.sand; pscs is 3-10% clay, 10-60% rock frags</i>	
	GOOSEFLATS	AQUIC XEROFLUVENTS 14 - 25" PPT	AQUIC XEROFLUVENTS 14 - 25" PPT	AQUIC XEROFLUVENTS 14 - 25" PPT	
	Sandy, mixed (calcareous), mesic Aeris Halaquepts <i>Deep or very deep to a duripan;</i> <i>Moderately well + somewhat poorly drained</i>	<i>Floodplains, low stream terraces</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	<i>Floodplains, low stream terraces</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	<i>Floodplains, low stream terraces (cool phase)</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	
		COXLAKE 12 - 16" PPT	COXLAKE 12 - 16" PPT	RET 15 - 20" PPT	
	Narcisse and Coxlake are similar Drainage classes are the difference	<i>Floodplains, low stream terraces</i> Coarse-loamy, mixed, mesic Cumulic Haploxerolls	<i>Floodplains, low stream terraces</i> Coarse-loamy, mixed, mesic Cumulic Haploxerolls	<i>Floodplains, low stream terraces</i> Coarse-loamy, mixed, frigid Cumulic Haploxerolls	
	AHTANUM 10" - 14" PPT	AHTANUM 10 - 14" PPT			
	Coarse-silty, mixed (calcareous), mesic Typic Duraquolls <i>Moderately deep to a duripan</i>	Coarse-silty, mixed (calcareous), mesic Typic Duraquolls <i>Moderately deep to a duripan</i>			
		%EMDENT			%CRYOFLUVENTS
		Ashy, calcareous, mesic Mollic Halaquepts <i>Has inclusions of coarse-silty, mixed, mesic Cumulic Haploxerolls</i>			<i>Alluvium mixed with volcanic ash, may have 7-20" thick volcanic ash influence in upper 30". Narrow floodplains, low terraces along mountain streams; sil, (s) / strat.vfsl to co.sand; pscs is 3-10% clay, 10-60% rock frags</i>
	GOOSEFLATS	AQUIC XEROFLUVENTS 14 - 25" PPT	AQUIC XEROFLUVENTS 14 - 25" PPT	AQUIC XEROFLUVENTS 14 - 25" PPT	
	Sandy, mixed (calcareous), mesic Aeris Halaquepts <i>Deep or very deep to a duripan;</i> <i>Moderately well + somewhat poorly drained</i>	<i>Floodplains, low stream terraces</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	<i>Floodplains, low stream terraces</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	<i>Floodplains, low stream terraces (cool phase)</i> <i>sil, (f)sl over strat.sil to co.s; <15% / 5-75% rx frags</i>	

ALLUVIUM		Range Soils (Continued)		ALLUVIUM		Forest Soils (Continued)			
Mesic ARIDIC		Mesic XERIC		MESIC Xeric		FRIGID Xeric		CRYIC Xeric	
9 - 12" PPT		12 - 15" PPT		14 - 18" PPT		15 - 25" PPT		20 - 30" PPT	
POORLY DRAINED	RATLAKE 9 - 11" PPT <i>Glacial lake sediment and recent alluvium; closed depressions on valley flats; shallow to duripan</i> Loamy, mixed (calcareous), mesic, shallow Typic Halaquepts	% EMDENT Ashy, calcareous, mesic Mollic Halaquepts <i>Has inclusions of coarse-silty, mixed, mesic Cumulic Haploxerolls</i>	RALSEN Coarse-loamy, mixed, mesic Fluvaquentic Haplaquolls	SANPOIL 15 - 20" PPT <i>Floodplains, low stream terraces</i> Coarse-loamy, mixed, frigid Cumulic Haplaquolls	SCLOME 18 - 20" PPT <i>Valley flats</i> Fine-loamy, mixed, frigid Fluvaquentic Haplaquolls	% ANDIC CRYAQUEPTS <i>Alluvium with volcanic ash component, mantle of material influenced by ash is 7 - 30" thick. Depressions on moraines on mountains. (si), (f)sl / strat. fsl to s; <35% / 5-70% rock frags</i>			
	TYPIC HAPLAQUOLLS <i>Alluvium, outwash on floodplains, low terraces</i> Very deep, commonly is (f)sl, ls over sl, (l)s; pscs is 5-12% clay, 0-50% rock fragments.								
VERY POORLY DRAINED		% BOSSBURG 12 - 18" PPT <i>Floodplain backswamps, depressions</i> Ashy, nonacid, mesic Mollic Andaquepts	% BOSSBURG 12 - 18" PPT <i>Floodplain backswamps, depressions</i> Ashy, nonacid, mesic Mollic Andaquepts	SANPOIL 15 - 20" PPT <i>Floodplains, low stream terraces</i> Coarse-loamy, mixed, frigid Cumulic Haplaquolls	% UNCAS 18 - 22" PPT <i>Backswamps, valley flats</i> Ashy, nonacid, frigid Mollic Andaquepts <i>alluvium overlain by decomposed organic matter</i>				
		MEDISAPRISTS ¹ 12 - 18" PPT <i>Organic soil - decomposed organic matter over alluvium, glacial outwash, or glacial lake sediment. Backswamps of floodplains and depressions on till plains, ground moraines and terraces. Depth to mineral soil material is 16 - 60" or more.</i>	MEDISAPRISTS ¹ 12 - 18" PPT <i>Organic soil - decomposed organic matter over alluvium, glacial outwash, or glacial lake sediment. Backswamps of floodplains and depressions on till plains, ground moraines and terraces. Depth to mineral soil material is 16 - 60" or more.</i>	BOROSAPRISTS ¹ 17 - 30" PPT <i>Organic soil - decomposed organic matter over alluvium or glacial lake sediment. Lake basins and depressions on till plains, ground moraines and terraces. Depth to mineral soil material is 16 - 60" or more.</i>	BOROSAPRISTS ¹ 17 - 30" PPT <i>Organic soil - decomposed organic matter over alluvium or glacial lake sediment. Lake basins and depressions on till plains, ground moraines and terraces. Depth to mineral soil material is 16 - 60" or more.</i>				
	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>	HISTOSOLS ² 10 - 25" PPT <i>Organic soil - decomposed organic matter over alluvium commonly containing a large component of volcanic ash. Backswamps of floodplains and depressions surrounding lakes, ponds. Depth to mineral soil material is 16 - 60" or more.</i>			
<p>¹ The organic material in the soil control section is largely rotten or decayed (sapric), representing advanced stages of decomposition. Medisaprists have a frost-free period of 100 to 150 days and occasional periods of flooding in February through April. Borosaprists have a frost-free period of 80 to 100 days and are ponded in February through May. An apparent watertable is present throughout the year in both soils. Underlying A and C mineral soil horizons are present in some pedons and are (stratified) silt loam to coarse sand with 0 to 50% rock fragments.</p> <p>² The organic material in the soil control section is in varying stages of decomposition (fibric, hemic and sapric material with 15 to 70 percent fiber). The frost-free period is 80 to 150 days and the soils are ponded in November through August. An apparent water table is present throughout the year. Underlying C mineral soil horizons, where present, are silt loam, fine sandy loam, sand, loam, or clay loam with 0 to 50% rock fragments.</p> <p>ABBREVIATION: pscs = soil particle-size control section</p> <p>MOST MINERAL ALLUVIAL SOILS HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH; SOME HAVE A SUBSTANTIAL COMPONENT OF ASH IN THE UPPER PART AS INDICATED BY % PRECEDING THE SOIL NAME. ALL MINERAL AND ORGANIC ALLUVIAL SOILS ARE VERY DEEP UNLESS NOTED OTHERWISE.</p>									

ESCARPMENTS- GLACIAL MATERIAL ¹		Range Soils	ESCARPMENTS- GLACIAL MATERIAL ¹	Forest Soils	
Mesic ARIDIC		Mesic XERIC	MESIC Xeric	FRIGID Xeric	CRYIC Xeric
9 - 12" PPT		12 - 15" PPT	14 - 18" PPT	15 - 25" PPT	20 - 30" PPT
> 60" DEEP (VERY DEEP)	HAPLOXEROLLS 11 - 15" PPT <i>Stratified; 30 - 70% slopes sl over ls,s; pscs is 5-30% clay, 10-60% rock frags.; Well, somewhat excessively drained</i>	HAPLOXEROLLS ² 11 - 15" PPT <i>Stratified; 30 - 70% slopes sl over ls,s; pscs is 5-30% clay, 10-60% rock frags.; Well, somewhat excessively drained</i>			
	TORRIORTHENTS <i>Highly dissected, eroded 25-70% backslopes of glacial till hills; soil profile is l / l,(f)sl and is mildly to strongly alkaline; pscs has 25-50% rock fragments. Well drained</i>		ULTIC HAPLOXEROLLS <i>Stratified or mixed; 40 - 70% slopes l / (f)sl, cl / sl, (l)s; pscs is 5-30% clay, 10-60% rx frag. Well to somewhat excessively drained</i>	LAKESOL 18 - 20" PPT <i>N-facing terrace escarpments, 30-65% slopes Coarse-silty, mixed, frigid Ultic Haploxerolls Many profiles average 16-22% clay in pscs; Well drained</i>	
	XERIC TORRIORTHENTS <i>Terraces and terrace escarpments; 0 - 65% slopes. Parent material is commonly mixed and is stratified (outwash usu. stratif.); soil profile is sl, ls / sicl to s (C horizon varies f-si to s-sk, stratific. common); pscsc has 2-15% clay, 15-60% rock fragments. Well to excessively drained</i>	TYPIC XERORTHENTS ³ 12 - 17" PPT <i>Mixed (recent landslides); 5 - 50% slopes; (s)l over (s)l over sil, sicl, sl; pscsc is 5-27% clay, 0-45% rock fragments. Well to somewhat excessively drained</i>	TYPIC XERORTHENTS ³ 12 - 17" PPT <i>Mixed (recent landslides); 5 - 50% slopes (s)l over (s)l over sil, sicl, sl; pscsc is 5-27% clay, 0-45% rock fragments. Well to somewhat excessively drained</i>		
		TYPIC XEROCHREPTS ³ 12 - 17" PPT <i>Mixed; 5 - 50% slopes sl over (s)l, sicl over sil, sicl, (s)l; pscsc is 15-30% clay, 5-45% rock fragments. Well drained</i>	TYPIC XEROCHREPTS ³ 12 - 17" PPT <i>Mixed; 5 - 50% slopes sl over (s)l, sicl over sil, sicl, (s)l; pscsc is 15-30% clay, 5-45% rock fragments. Well drained</i>		

¹ Soil parent material for a given profile may include glacial outwash, glaciofluvial material, and/or glacial lake sediment. Parent material is stratified (terrace escarpment) or mixed by colluvial action (unstable, associated with landslides). Exception: parent material for Torriorthents is predominantly glacial till.

² The Haploxerolls, cobbly soil phase is moderately deep to very deep and well to excessively drained and is in complex with rubble land and rock outcrop on 30 to 70 percent slopes (map unit #404). Parent material is colluvium derived from basalt and granitic rock mixed with loess, and the average annual precipitation is 12 to 15 inches.

³ Typic Xerorthents and Typic Xerochrepts can occur in a complex on the landscape; the latter has a B (cambic) horizon, the former lacks this feature.

ABBREVIATION: pscs = soil particle-size control section

GLACIAL ESCARPMENT SOILS HAVE AN ADMIXTURE OF LOESS AND VOLCANIC ASH. THE SOILS ARE GENERALLY DEEP OR VERY DEEP AND VARY FROM WELL TO EXCESSIVELY DRAINED, AS INDICATED HERE.

RESTRICTIVE LAYER TERMS

KIND	HARDNESS
Bedrock (residuum, lithic)	Indurated
Weathered bedrock (grus, paralithic)	Moderately cemented
Duripan	Weakly to strongly cemented
Dense glacial till	Noncemented

From: *Soil Survey of Colville Indian Reservation (USDA NRCS, Table 20)*