

Major Divisions			Graph symbol	Letter symbol	Typical descriptions				
Coarse-grained soils	Gravel and gravelly soil	Clean gravels (little or no fines)		GW	Well-graded gravel-sand mixtures, little or no fines				
				GP	Poorly graded gravels, gravel-sand mixtures, little or no fines				
		More than 50% of coarse fraction retained on a no. 4 sieve	Gravels with fines (appreciable amount of fines)		GM	Silty gravels, gravel-sand-silt mixtures			
					GC	Clayey gravels, gravel-sand-clay mixtures			
	More than 50% of material is larger than no. 200 sieve size	Sand and sandy soils	Clean sand (little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines			
					SP	Poorly graded sands, gravelly sands, little or no fines			
		More than 50% of coarse fraction passing a no. 4 sieve	Sands with fines (appreciable amount of fines)		SM	Silty sands, sand-silt mixtures			
					SC	Clayey sands, sand-clay mixtures			
				Fine-grained soils	Sils and clays	Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour silty or clayey fine sands or clayey silts with slight plasticity
								CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
More than 50% of material is smaller than no. 200 sieve size	Sils and clays	Liquid limit greater than 50%		OL	Organic silts and organic silty clays or low plasticity				
				MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils				
				CH	Inorganic clays or high plasticity, fat clays				
Highly organic soils				OH	Organic clays of medium to high plasticity, organic silts				
				PT	Peat, humus, swamp soils with high organic contents				

Figure 5.12 Unified soil classification system.

organic material, root zones, burrows, calcareous or other mineralized zones, and desiccation features frequently provide avenues of contaminant migration through low-permeability soils into underlying aquifers.