Project: King County WTD / Brightwater Conveyance System
Project Location: King & Snohomish Counties, Washington
Contract Number: E23007E

Key to Log of Boring and Descriptive Terms for Soil

Unified Soil Classification System (ASTM D2487 & D2488)

Major Divisions			Symbols: Graph	Symbols: Letter	Typical Descriptions
Coarse Grained Soils: More than 50% of No. 200 Sieve Size	Gravels: More than 50% of Coarse Fraction Retained in No. 4 Sieve	Clean Gravels (less than 5% fines)		GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
				GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (more than 12 % fines)		GM	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sands: More than 50% of Coarse Fraction Passing through No. 4 Sieve	Clean Sand (less than 5% fines)		SW	Well-Graded Sands, Gravelly Sands, Little or no Fines
				SP	Poorly Graded Sands, Gravelly Sands, Little or no Fines
		Sands with Fines (more than 12 % fines)		SM	Silty Sands, Sand-Clay Mixtures
				SC	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils: More than 50% of Material is Smaller than No. 200 Sieve Size	Silts 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
				OL	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays: Liquid Limit Greater than 50%			MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH	Inorganic Clays of High Plasticity, Fat Clays
				OH	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT	Peat, Humus, Swamp Soils with High Organic Contents (see ASTM D4427-92)

Relative Density or Consistency

Coarse-Grained Soils		Fine-Grained Soils	
Relative Density	**N, SPT Blows / ft**	**Relative Consistency**	**N, SPT Blows / ft**
Very loose	0 - 4	Very soft	< 2
Loose	4 - 10	Soft	2 - 4
Medium dense	10 - 30	Medium stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very dense	Over 50	Very stiff	15 - 30
		Hard	Over 30

Minor Descriptors

Trace	0 - 5%
Slightly (clayey, silty, sandy, gravelly)	5 - 12%
Clayey, silty, sandy, gravelly	12 - 30%
Very (clayey, silty, sandy, gravelly)	30 - 50%

Moisture Content

Dry	Absence of moisture, dusty
Moist	Damp but no visible water
Wet	Visible free water, from below the water table

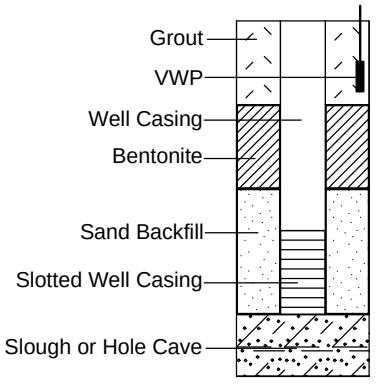
Abbreviations

SA	Sieve Analysis or -200 Wash
M	Moisture
DD	Dry Density
AL	Atterberg Limits
HA	Hydrometer Analysis
C	Consolidation
TX	Triaxial
MV	Field Mini Vane Shear
TV	Torvane Shear
LV	Laboratory Mini Vane Shear
PP	Pocket Penetrometer
OC	Organic Content
TE	Tephra Identification
PA	Paleontologic Analysis
MP	Micropaleontologic Analysis
AD	Age Date
BG	Bulk Geochemical Analysis
ENV	Environmental Testing
OW	Observation Well
VWP	Vibrating Wire Piezometer
N	Number of hammer blows for last 12 inches sampled

Sampler Symbols

- 3" O.D. Split Spoon Sample (Dames & Moore)
- Core
- Non-standard penetration test
- 2" O.D. Split Spoon with 140lb Hammer and 30-inch drop (SPT)
- Steel Liner
- Lexan Liner
- Grab Sample

Well Installation Symbols



NOTES:

1. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions at other locations or times.
2. Dual Symbols(symbols separated by a hyphen, i.e. SP-SM, slightly silty fine SAND) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.
3. Order of Soil Description Terms:
Density/consistency, color, moisture, minor constituents, MAJOR CONSTITUENT (USCS), trace consitituents, plasticity, grain size, shape, and gradation, additional comments (organics, odors etc.); (GEOLOGIC UNIT)

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Figure 2-1