

Physical Data of Soil Profiles Formed on Late Quaternary Marine Terraces near Santa Cruz, California

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1.0 Introduction

The marine terraces in and around Santa Cruz, California represent a set of well-preserved terraces formed as a product of geology, sea level and climate. A marine terrace begins as a wave cut platform. Eustatic sea level changes, sea cliff erosion and tectonic uplift work together to generate marine terraces. “When a wave-cut platform is raised (*due to tectonic activity*) above sea level and cliffed by wave action it becomes a marine terrace” (Bradley, 1957, pp.424). During glacial periods, eustatic sea level is estimated to have dropped by 150 meters (Fairbanks 1989). Cliff retreat measured from aerial photographs between 1930 and 1980 vary from 0.0 to 0.2 m y⁻¹ (Best and Griggs 1991). Estimates of uplift rates along the Santa Cruz coastline vary from 0.10 to 0.48 m kyr⁻¹ (Bradley and Griggs 1976, Weber and others 1999). Uplift mechanisms include coseismic uplift associated both with a reverse component of slip on the steeply SW dipping Loma Prieta fault in the restraining bend of the San Andreas Fault and a small component of reverse slip on the steeply SE dipping San Gregorio fault (Anderson and Menking 1994). Previous work studying physical properties on these terraces include Pinney and others (in press) and Aniku (1986) and Bowman and Estrada (1980).

Sedimentary deposits of the marine terraces are a mixture of terrestrial and marine sediments but generally consist of a sheet of marine deposits overlying the old platform and a wedge of non marine deposits banked against the old sea cliff (Bradley, 1957). Bedrock underlying the terraces in the Santa Cruz area is generally either Santa Margarita Sandstone or Santa Cruz Mudstone. The Santa Margarita Sandstone represents an upper Miocene, transgressive, tidally dominated marine-shelf deposit with crossbedded sets of sand and gravel and horizontally stratified and bioturbated invertebrate-fossils beds (Phillips, 1990). The siliceous Santa Cruz Mudstone, of late Miocene age, conformably overlies the Santa Margarita Sandstone. The Santa Cruz Mudstone is a thin to medium-bedded siliceous mudstone with nonsiliceous mudstone and siltstone and minor amounts of sandstone. The siliceous nature implies organic deposition in a quiescent, deep-water environment. Bedrock is mantled by 1-4 meters of medium to coarse-grained regressive beach sediment and fluvial deposits from the Ben Lomond Mountains.

Terrace age increases with elevation above sea level and weathering of primary minerals increases with age. The suite of soils formed on the terraces is referred to as a soil chronosequence. Soil chronosequences, important tools in characterizing natural

weathering rates, are defined as a group of soils that differ in age and therefore in duration of weathering but have similar climatic conditions, vegetation, geomorphic position and parent material (Jenny, 1941; Birkland, 1999). Soils are frequently useful indicators of geomorphic age (Muhs, 1982; Switzer and others, 1988) and are a function of pedogenic and/or eolian processes. Some aspects of soil development can be episodic but when viewed on large time scales can be perceived as continuous (Switzer and others, 1988).

The age of the soil may be constrained by the age of the deposit, since soil formation generally commences when deposition has ceased (Birkland, 1999). Dating of the terraces provides an unprecedented opportunity to study weathering and soil-formation rates (Perg and others, 2001; Hanks and others, 1984; Bradley and Griggs, 1976; Bradley and Addicott, 1968; Bradley, 1956). Ages of the terraces recently dated by cosmogenic radionuclide are, starting with the youngest, 65, 92, 137, 139 and 226 ky (Perg and others, 2001). However these ages are much younger than recent radiometric dates on mollusk shells (Muhs, US Geological survey, personal communication 2002; Bradley and Addicott, 1968).

For this study soils were sampled on five terraces. Terrace one in the Lighthouse Field along Westcliff in Santa Cruz was the last site selected, and this report contains minimal data on this terrace. Sites on the second, third and fourth terraces are located in Wilder Ranch, Santa Cruz, California. Site five is on private property north of Wilder Ranch. Careful consideration was taken in selecting field sites, choosing locations in a topographically flat area to avoid effects of erosion and trying to keep parent material similar.

This report contains physical properties of the soil profiles on four of the five marine terraces near Santa Cruz, California, excluding the youngest terrace in all tables except 6 and 7. Data includes field descriptions, bulk density, grain size analyses, weight percent magnetic fraction and the soil development index. Soil properties are important when trying to understand the chemistry of a given profile or when comparing profiles. Grain size constrains the movement of water in a profile thus controlling movement of chemicals and weathering rates. Bulk density is a useful property to calculate chemical inventory. Quantifying the magnetic fraction aids in understanding the Fe inventory for these soils. The soil development index is a semi-quantitative way to define the degree of

development of a soil profile. This is a useful way to compare development of profiles for this chronosequence or compare the Santa Cruz terraces to a suit of other terraces or another chronosequence.

2.0 Methods

2.1 Field and bulk density sampling

Samples were described in the field by J.W. Harden and J. Munster from hand dug soil pits according to the Soil Survey Manual. Other profiles were described from hand auger samples, by J. Munster according to the Soil Survey Manual and reported in Table 6.

Bulk density samples were extracted horizontally and vertically using cores of known diameter. The most consistent and accurate bulk density estimates for mineral soils were made from cores obtained with a Model 0200 coring device from Soilmoisture Equipment Corporation (Goleta, CA) in which internal rings can be disassembled to obtain intact samples. Samples were then placed on open shelves in an isolated room and allowed to air dry to a constant weight. After air-drying, samples were oven-dried for 48 hours in a forced-draft oven at 105°C.

2.2 Particle size

Samples were acquired from splits of hand augured samples that had been oven dried and had particles >2mm removed. Since soil pit samples were not available at time of analysis samples were chosen using field notes to represent each horizon at each of the four terraces, excluding the youngest terrace. Later comparison with soil pits showed that not all horizons were represented.

Grain-size data was determined using two methods, sedigraph for particle size <0.05 mm and dry sieving for particle size >0.05 mm. Classification of size fractions are according to the United States Department of Agriculture (Soil Survey Staff, 1998) and defined to be 2-1 mm as very coarse sand, 1-0.6 mm as coarse sand, 0.6-0.2 mm as medium sand, 0.2-0.1 mm as fine sand, 0.1-0.05 mm as very fine sand, 0.05-0.002 mm as silt and <2 µm as clay. Clay was then sub divided into 2-1 µm, 1-0.5 µm and <0.5 µm fractions.

Preparation of samples included removing organic material by adding H₂O₂ and heating (no more than 1 hour) on a hot plate to evaporate the H₂O₂. Samples were deflocculated by adding a 5% Calgon solution and put into an ultrasonic bath for five minutes. Wet sieving using a 0.05mm in diameter sieve achieved separation of sand from clay/silt portions.

Dry sieving is a straightforward method, used for sands, where sieves are stacked with the largest size opening at the top. The sieves were agitated by mechanical means for three minutes. After sieving was completed the weight of the soil particles retained in each sieve is determined relative to the total sample weight and multiplied by 100 to obtain percentage.

Grain size distribution of silt and clays was determined utilizing a sedigraph. The sedigraph is utilized for its quickness of analysis. Using Stokes's Law and an X-Ray beam, the sedigraph monitors the rate at which particles settle and are removed from the monitored volume. Results yielded were in table form presenting mass % finer vs. grain size. An analysis needs ~50mL of solution, solution volume is determined by concentration of particles in sample, and runs from 60µm to 0.5µm. The mass % finer is applied directly to the amount of clay/silt fraction of the sample. Three samples were rerun to yield a standard deviation for the sedigraph method (<0.05mm fraction) of 1.6%.

2.3 Magnetic Fraction

Magnetic fraction was analyzed on splits from soil pit samples. These samples were gently crushed to pass through a 2mm sieve, insuring no nodules or rocks were crushed.

Percent of magnetic fraction of >2mm particles was calculated as weight of magnetic particles >2mm divided by weight of all >2 mm particles of the whole soil. The >2 mm particles of the whole soil was weighed, a metal household magnet was thoroughly stirred throughout these particles, any particle attached to the magnet was transferred into another weighing dish until no particles were found to stick to the magnet. Those particles attached to the magnet were then weighed. The magnetic fraction could be underestimated if particles were too large for the magnet to move or if the particle was coated with a non-magnetic material, such as soil, to a point that magnetic material in the core of the particle was not affected by the magnet.

Up to 5 grams of <2 mm soil was ground to pass an 80-mesh sieve, weighed, recorded to the 4th decimal place, and then transferred into a crucible. A magnetic stirring bar was stirred throughout the soil to insure close contact with the soil and gently tapped against the side of the crucible to knock off any soil particles. The magnetic particles were removed from the magnetic stirring bar onto a clean glass plate. The glass plate was placed onto a magnetic stirrer and the stirrer was turned on and slowly increased to a medium setting. The material then began to migrate towards a spot on the center of the stirrer while separating from the soil. When all the soil was separated, the magnetic materials were weighed and the percentage calculated (Singer and others, 1986). A standard deviation of 0.0291% was calculated, from replicate separations of the same sample.

3.0 Description of Figures and Tables

3.1 Figure 1 Location of terrace sites

Locations for four terrace sites in Santa Cruz.

3.2 Table 1 GPS of terrace sites

Coordinates in UTM and Latitude/Longitude. Courtesy of David Stonestrom.

Location—Terrace ID and location of GPS measurements.

N data—Number of measurements recorded

StdErr XY—Error of measurements from the mean in meters

3.3 Table 2 Field descriptions

Profile ID—Used to identify the sample.

Basal Depth—Bottom depth of the horizon sampled in cm.

Thickness—Horizon thickness in cm.

Horizon ID—Horizon description according to conventions of the Soil Survey Staff (1998).

Sample Description—Brief field description of the horizon.

pH—The pH of the sample as defined in the field or in the lab using the *LaMotte* pH field kit.

Munsell Moist Color—Soil color according to the Munsell Color chart, when only dry color was described a D is used to indicate this.

Roots—Root abundance and size according to conventions of Soil Survey Staff (1998).

Structure—Soil structure abundance, size and type according to conventions of Soil Survey Staff (1998).

Stickiness—Stickiness according to conventions of Soil Survey Staff (1998).

Plasticity—Plasticity according to conventions of Soil Survey Staff (1998).

Moist or Dry Consistence—Consistence, depending on if soil was moist or dry descriptors was used according to conventions of Soil Survey Staff (1998).

Texture—Soil texture as determined in the field according to conventions of Soil Survey Staff (1998).

3.4 Table 3 Bulk density

Profile ID—Used to identify the sample.

Basal Depth—Bottom depth of the horizon sampled in cm.

Thickness—Horizon thickness in cm.

Horizon ID—Horizon description according to conventions of the Soil Survey Staff (1998).

Sample Description—Brief field description of the horizon.

Average Bulk Density AD—An average of 1-3 samples calculating grams of air-dry soil per cubic centimeter

Average Bulk Density OD—An average of 1-3 samples calculating grams of oven-dry soil per cubic centimeter

Notes—Indicates how many samples and depth of samples that were used in averaging bulk density values.

3.5 Table 4 Particle size

Profile ID—Used to identify the sample.

Basal Depth—Bottom depth of the horizon sampled in cm.

Horizon ID—Horizon description according to conventions of the Soil Survey Staff (1998).

Texture—Soil texture as defined by particle size distribution according to conventions of Soil Survey Staff (1998).

All particle size distributions are defined by USDA classifications (see section 3.2).

3.6 Table 5 Magnetic fractions

Profile ID—Used to identify the sample.

Basal Depth—Bottom depth of the horizon sampled in cm.

Horizon ID—Horizon description according to conventions of the Soil Survey Staff (1998).

Sample Description—Brief field description of the horizon.

>2 mm Fraction—Percent of >2 mm fraction that is magnetic.

<2 mm Average Fraction—Calculated average percent of <2 mm fraction that is magnetic.

<2mm SD(n=2) —Calculated standard deviation for two runs on the same sample. Below the sample standard deviations is the average standard deviation for all samples.

A “-“ indicates no analysis performed

3.7 Soil auger descriptions

Terrace—Terrace location.

Sample ID—Used to identify the sample.

Basal Depth—Bottom depth of horizon.

Description Interval—The depths at which the sample was described

Sample Description—Brief description of horizon.

Roots Present—Described according to the size distributions of Soil Survey Staff (1998), abundance could not be determined in augur samples.

Dry Munsell Color—Soil color according to the Munsell Color chat.

Texture—Soil texture as determined in the field according to conventions of Soil Survey Staff (1998).

Stickiness—Stickiness according to conventions of Soil Survey Staff (1998).

Plasticity—Plasticity according to conventions of Soil Survey Staff (1998).

3.8 Soil development index

Soil properties were quantified according to Harden (1982) and Harden and Taylor (1983) and an index was used to combine three to four soil field properties. These properties are: texture (combination of texture and wet consistence), rubification (color hue and chroma), melanization (color value) and pH lowering (only samples from hand dug soil pits have pH values).

A sample from Wilder Beach was used as the parent material for all soils and all horizons. While the terraces are likely a mix of marine and fluvial sediments, the sediment source of the beach is likely similar to sources of sediment during terrace

formation as the bedrock is similar throughout the study area. Wilder Beach sand has a dry Munsell color of 10YR7/2, texture of sand-non sticky, non plastic- and a pH of 7.2.

To normalize data, maximum values are used according to Harden (1982). These values for texture, rubification, melanization, and pH are 90, 190, 70 and 3.5 respectively. However due to the advanced development of many horizons, total texture values exceeded this maximum yielding values ranging between 0-1.3. A value greater than one shows that (1) these horizons are more developed than soils near Merced (Harden, 1982) or (2) parent material for these horizons may be misrepresented.

Most values of rubification and melanization use only dry color values. When a horizon has only a dry or a wet value the quantity is multiplied by two, in few cases the dry and wet values are summed.

This table presents quantified soil field properties, normalized data, sum of normalized properties, horizon index (n), index-cm of development for all horizons and index-cm and average index/cm for each profile.

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5.0 Acknowledgements

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Map of Terrace Locations

fig.1a



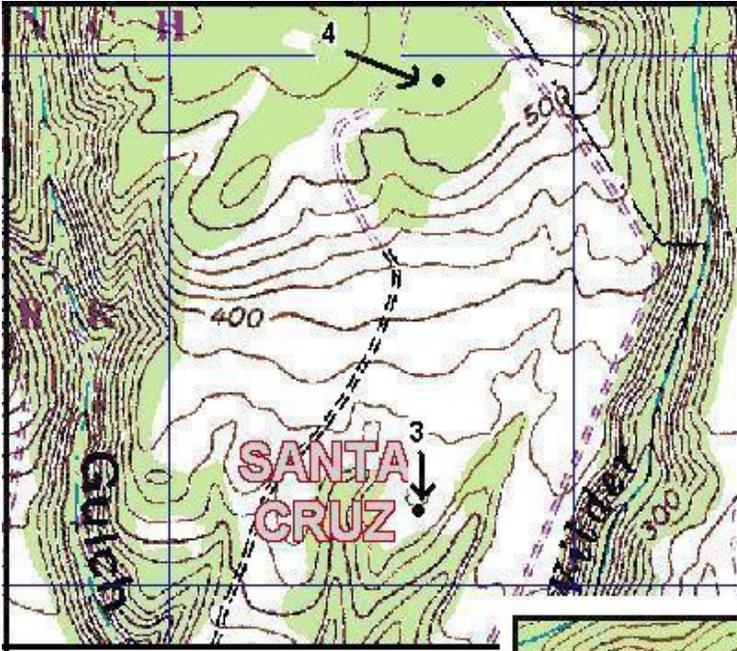


Fig. 1b
Map of research sites on terrace 3 and 4. Located inside Wilder Ranch, Santa Cruz, California

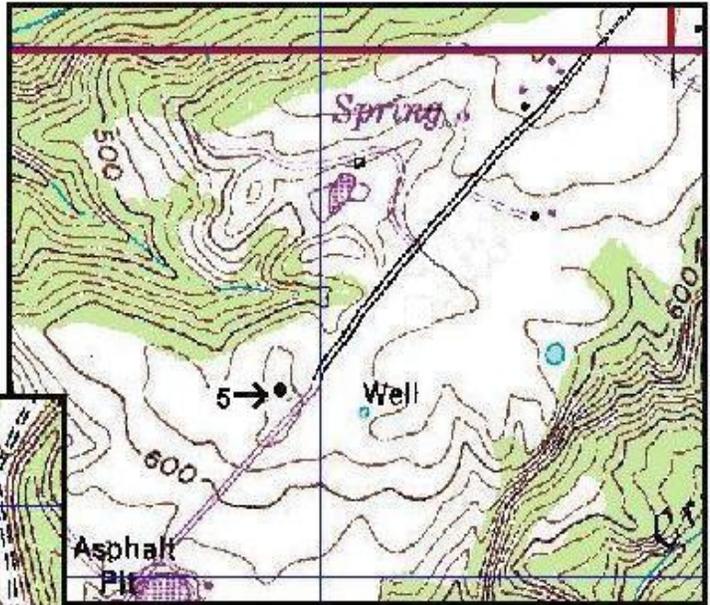


Fig. 1c
Map showing research site on terrace 5. Location ~3.5 miles west of Wilder Ranch off

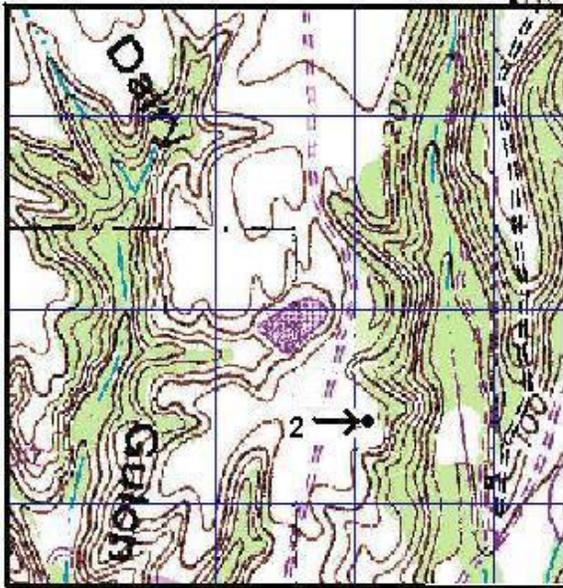


Fig. 1d
Map showing research site on terrace 2. Located in Wilder Ranch



contour interval=20ft.

SANTA CRUZ GPS LOCATIONS (DATUM = NAD27 CONUS):
ACCUMULATIVE AVERAGE POSITIONS:

Location	UTM Zone	Easting (m)	Northing (m)	N data	StdErr XY (m)	N Latitude	W Longitude
SC-T2	10S	581446	4091507	4	2.5	36°58'04.69"	122°05'06.14"
SC-T3	10S	582097	4092444	3	3.1	36°58'34.90"	122°04'39.47"
SC-T4	10S	582143	4093249	3	1.3	36°59'00.98"	122°04'37.30"
SC-T5	10S	577144	4094428	3	1.6	36°59'40.78"	122°08'00.00"

table 2.xls

Profile ID	Basal Depth (cm)	Thickness (cm)	Horizon ID	Sample Description	pH	Munsell Moist Color <i>D=dry</i>	Roots	Structure	Stickiness	Plasticity	Moist or Dry Consistence	Texture
SCT2 1.5	5	5	A	Darkened topsoil with many roots	6.0	10YR3/3	common very fine, many fine	common medium granular	not sticky	not plastic	soft	loam
SCT2 1.13	13	8	A	Darkened topsoil with many roots	6.0	10YR3/3	common very fine, many fine	common medium granular	not sticky	not plastic	soft	loam
SCT2 1.39	39	26	A	Dark topsoil with roots	5.5	10YR3/2	few very fine and fine	few coarse subangular blocky	slightly sticky	slightly plastic	very friable	loam
SCT2 1.50	50	11	AB	Dark, plastic subsoil with roots	7.0	10YR4/6	few very fine	few v.coarse subangular blocky	slightly sticky	plastic	very friable	silty clay loam
SCT2 1.68	68	18	AB	Dark, plastic subsoil with roots	7.0	10YR4/6	few very fine	few v.coarse subangular blocky	slightly sticky	plastic	very friable	silty clay loam
SCT2 1.88	88	20	B	Slightly mottled subsoil with roots	7.0	10YR4/3	few very fine	few v.coarse subangular blocky	slightly sticky	plastic	friable	clay loam
SCT2 1.100	100	12	B	Glayed, gray subsoil with roots	7.0	10YR4/1	very few very fine	few medium subangular blocky	sticky	very plastic	friable	clay loam
SCT2 2.12	12	12	A	Topsoil rooting zone	-	10YR3/3	many very fine and fine	many coarse granular	slightly sticky	slightly plastic	very friable	loam
SCT2 2.22	22	10	A	Topsoil rooting zone	-	10YR2/2	common very fine, few fine	common coarse subangular blocky	slightly sticky	slightly plastic	friable	loam
SCT2 2.44	44	22	AB	Horizon with topsoil and mineral mixing	-	10YR4/4	few very fine and fine	common coarse subangular blocky	slightly sticky	slightly plastic	very friable	loam
SCT2 2.65	65	19	B	Mineral horizon with Fe concretions	-	10YR4/4	not present	many medium subangular blocky	sticky	plastic	friable	loam
SCT2 2.85	85	20	B	Mineral horizon with Fe stains, nodules and redox features	-	10YR4/2	few very fine	many coarse subangular blocky	sticky	plastic	friable	clay loam
SCT2 2.100	100	15	B	Mineral horizon with redoxy morpnic features	-	10YR 4/1	not present	many coarse subangular blocky	-	-	friable	clay loam
SCT3 1.5	5	5	A	Dark topsoil with many roots	5.5	10YR3/2	common v.fine, many fine	many coarse subangular blocky	slightly sticky	slightly plastic	slightly hard	loam
SCT3 1.10	10	5	A	Dark topsoil with many roots	5.6	10YR3/2	common v.fine and fine	many fine subangular blocky	slightly sticky	slightly plastic	slightly hard	loam
SCT3 1.20	20	10	A	Dark topsoil with many roots	5.8	10YR4/3	v.few fine, common v.fine	common coarse subangular blocky	slightly sticky	slightly plastic	slightly hard	loam
SCT3 1.30	30	10	AB	Dark subsoil w/ nodules from above and roots	5.6	10YR3/3	few very fine	few coarse subangular blocky	slightly sticky	slightly plastic	slightly hard	loam
SCT3 1.55	55	25	AB	Dark subsoil w/ nodules from below and roots	5.8	10YR4/4	few very fine and fine	few coarse subangular blocky	sticky	slightly plastic	soft	loam
SCT3 1.70	70	15	B	Mottled subsoil with feldspar, clay films and roots	5.6	10YR6/8D	few very fine	many medium subangular blocky	sticky	plastic	very hard	clay loam
SCT3 1.90	90	20	B	Dark subsoil with few pebbles and roots	5.7	10YR4/2D	-	common fine prismatic	sticky	plastic	very hard	clay loam
SCT3 1.100	100	10	B	Highly mottled subsoil	5.4	10YR5/1D	-	-	sticky	very plastic	very hard	clay loam
SCT4 1.10	10	10	A	Dark topsoil with roots	6.0	10YR3/3	few fine, common very fine	many v.coarse subangular blocky	not sticky	not plastic	slightly hard	silt loam
SCT4 1.20	20	10	AB	Dark topsoil with roots	6.0	10YR3/4	few fine and very fine	common coarse subangular blocky	not sticky	slightly plastic	slightly hard	silt loam
SCT4 1.28	28	8	AB	Dark topsoil with roots	6.2	7.5YR4/6	few fine and very fine	common coarse subangular blocky	sticky	plastic	hard	loam
SCT4 1.40	40	12	B	Dark subsoil with clay films and roots	6.2	7.5YR5/6D	few very fine	common coarse subangular blocky	slightly sticky	slightly plastic	hard	loam
SCT4 1.60	60	20	B	Dark subsoil with clay films and roots	6.6	7.5YR6/8D	few very fine and medium	common v.coarse prismatic	slightly sticky	slightly plastic	hard	clay loam
SCT4 1.80	80	20	B	Dark subsoil with mottling and roots on ped faces	6.4	7.5YR4/6	common very fine	common v.coarse prismatic	sticky	plastic	hard	clay loam
SCT4 1.100	100	20	B	Dark subsoil with mottling	7.0	7.5YR5/0	few very fine	few v.coarse prismatic	sticky	plastic	friable	clay loam
SCT5 1.10	10	10	A	Dark topsoil with roots	6.2	10YR4/2	common fine	many coarse subangular blocky	slightly sticky	slightly plastic	very hard	loam
SCT5 1.20	20	10	A	Dark topsoil with roots	6.2	10YR3/3	common fine and medium	many fine-coarse subangular blocky	slightly sticky	slightly plastic	very hard	loam
SCT5 1.37	37	17	AB	Dark subsoil with roots	6.6	10YR3/3	few fine, common medium	common coarse subangular blocky	slightly sticky	slightly plastic	slightly hard	loam
SCT5 1.55	55	18	B	Dark subsoil w/red pebbles and v.fine roots along ped faces	5.8	10YR5/4	common v.fine, fine and medium	many medium subangular blocky	sticky	plastic	very hard	clay loam
SCT5 1.80	80	25	B	Dark subsoil with clay films, common red pebbles	5.6	10YR4/4	few very fine	many coarse prismatic	sticky	plastic	very hard	clay loam
SCT5 1.100	100	20	B	Dark subsoil with common v.fine roots along ped faces	5.2	10YR4/1D	few very fine	common medium prismatic	sticky	plastic	friable	clay loam

table 3.xls

Profile ID	Basal Depth (cm)	Thickness (cm)	Horizon ID	Sample Description	Average Bulk Density AD (g/cm ³)	Average Bulk Density OD (g/cm ³)	Notes
SCT2 1.5	5	5	A	Darkened topsoil with many roots	0.7947	0.7846	Average of three samples taken.
SCT2 1.13	13	8	A	Darkened topsoil with many roots	1.1142	1.0968	Average of samples taken at 8, 7, and 11 cm.
SCT2 1.39	39	26	A	Dark topsoil with roots	1.4037	1.3868	Average of samples taken at 27 and 34 cm.
SCT2 1.50	50	11	AB	Dark, plastic subsoil with roots	1.5838	1.5649	Average of samples taken at 43 and 48 cm.
SCT2 1.68	68	18	AB	Dark, plastic subsoil with roots	1.4885	1.4613	Average of samples taken at 54 and 59 cm.
SCT2 1.88	88	20	B	Slightly mottled subsoil with roots	1.4641	1.4318	Average of samples taken at 77 and 78 cm.
SCT2 1.100	100	12	B	Glayed, gray subsoil with roots	1.4864	1.4450	Average of samples taken at 90 and 91 cm.
SCT3 1.5	5	5	A	Dark topsoil with many roots	0.9407	0.9272	Average of two samples.
SCT3 1.10	10	5	A	Dark topsoil with many roots	1.4738	1.4489	
SCT3 1.20	20	10	A	Dark topsoil with many roots	1.2967	1.2781	Sample taken at 15 cm.
SCT3 1.30	30	10	AB	Dark subsoil w/ nodules from above and roots	1.3196	1.3030	Sample with base depth of 30 cm.
SCT3 1.55	55	25	AB	Dark subsoil w/ nodules from below and roots	1.3599	1.3439	Sample taken at 40 cm.
SCT3 1.70	70	15	B	Mottled subsoil with feldspar, clay films and roots	1.3562	1.3402	Sample taken at 60 cm.
SCT3 1.90	90	20	B	Dark subsoil with few pebbles and roots	1.3696	1.3025	Sample taken at 80 cm.
SCT3 1.100	100	10	B	Highly mottled subsoil	ND	ND	
SCT4 1.10	10	10	A	Dark topsoil with roots	1.3835	1.3662	Average of samples with base depths of 5, 7, and 7 cm.
SCT4 1.20	20	10	AB	Dark topsoil with roots	1.3937	1.3791	Average of samples with base depths of 18, 18, and 20 cm.
SCT4 1.28	28	8	AB	Dark topsoil with roots	1.5431	1.5282	Average of samples with base depths of 27 and 27 cm.
SCT4 1.40	40	12	B	Dark subsoil with clay films and roots	1.6309	1.6141	Average of samples with base depths of 31 and 39 cm.
SCT4 1.60	60	20	B	Dark subsoil with clay films and roots	1.5809	1.5447	Average of samples with base depths of 46, 49, and 53 cm.
SCT4 1.80	80	20	B	Dark subsoil with mottling and roots on ped faces	1.2021	1.1586	Sample has base depth of 62 cm.
SCT4 1.100	100	20	B	Dark subsoil with mottling	ND	ND	
SCT5 1.10	10	10	A	Dark topsoil with roots	ND	ND	
SCT5 1.20	20	10	A	Dark topsoil with roots	ND	ND	
SCT5 1.37	37	17	AB	Dark subsoil with roots	ND	ND	
SCT5 1.55	55	18	B	Dark subsoil w/ red pebbles and v.fine roots along ped faces	ND	ND	
SCT5 1.80	80	25	B	Dark subsoil with clay films, common red pebbles	ND	ND	
SCT5 1.100	100	20	B	Dark subsoil with common v.fine roots along ped faces	ND	ND	

table 4.xls

Profile ID	Basal Depth (cm)	Horizon	Texture	Total Sand (%)	V. Coarse Sand (%)	Coarse Sand (%)	Medium Sand (%)	Fine Sand (%)	V. Fine Sand (%)	Silt (%)	Total Clay <2 μ m (%)	Clay 2-1 μ m (%)	Clay 1-0.5 μ m (%)	Clay <0.5 μ m (%)
SCT2-0.10	10	A	sandy clay loam	51.30	1.26	3.47	14.88	22.15	9.53	23.76	21.75	2.64	2.64	16.47
SCT2-0.22	22	A	sandy clay loam	52.29	1.60	3.14	14.27	22.70	10.58	20.88	18.81	2.18	2.42	14.21
SCT2-0.48	48	AB	sandy clay loam	50.66	1.27	2.66	14.02	23.22	9.49	22.89	18.28	4.08	6.51	7.70
SCT2-0.59	59	AB	sandy clay loam	55.05	1.34	2.85	16.42	24.84	9.60	21.00	22.75	2.84	11.42	8.49
SCT2-0.79	79	B	sandy clay loam	56.77	1.52	3.20	16.41	24.99	10.65	12.75	25.09	3.86	16.54	4.69
SCT2-0.95	95	B	sandy clay	53.59	1.45	3.14	11.54	22.52	14.93	9.47	28.72	1.83	1.87	25.02
SCT2-6.48	648		loamy sand	84.17	4.88	5.67	49.70	18.90	5.02	5.05	2.31	0.68	0.35	1.29
SCT3-0.10	10	A	sandy clay loam	52.01	0.99	2.10	14.10	21.49	13.33	25.38	21.88	4.25	4.49	13.14
SCT3-0.45	45	AB	sandy clay loam	50.73	2.66	2.42	13.81	21.40	10.44	20.83	28.42	2.07	2.51	23.84
SCT3-0.54	54	AB	sandy clay loam	54.38	2.26	2.02	14.24	23.87	11.99	25.41	19.80	3.48	5.61	10.72
SCT3-1.59	159	B	sandy clay loam	63.12	1.75	3.15	21.37	30.94	5.91	10.44	26.19	2.82	3.33	20.03
SCT3-1.91	191	C	sandy loam	79.89	2.37	3.71	24.76	41.69	7.36	6.88	12.73	1.82	1.98	8.92
SCT3-7.31	731		sandy loam	79.75	0.13	0.40	4.09	51.35	23.78	7.17	12.26	2.56	2.82	6.88
SCT4-0.01	1	A	sandy loam	68.64	3.56	8.34	26.50	22.41	7.83	16.95	14.56	3.25	11.31	0.00
SCT4-0.33	33	AB	sandy clay loam	53.95	3.38	5.25	19.77	19.56	5.99	15.61	30.04	2.69	3.88	23.46
SCT4-0.50	50	B	clay	32.86	2.16	3.69	11.95	11.53	3.53	9.18	57.35	1.86	2.99	52.49
SCT4-1.21	121	B	sandy clay loam	54.45	4.30	5.51	11.90	27.62	5.12	12.25	32.95	3.71	29.24	0.00
SCT4-3.96	396	C	sandy loam	76.93	0.44	1.43	16.11	33.86	25.09	10.89	11.61	2.11	9.47	0.02
SCT4-4.75	475		loamy sand	83.69	0.55	0.85	21.48	43.55	17.27	7.98	7.82	2.16	1.86	3.79
SCT5-0.11	11	A	sandy clay loam	59.29	1.05	3.51	21.46	13.31	19.96	18.14	22.08	2.53	3.10	16.45
SCT5-0.33	33	AB	sandy clay loam	48.00	1.10	3.42	20.42	12.91	10.14	23.20	28.36	2.63	2.84	22.89
SCT5-0.54	54	B	clay	30.18	0.69	2.23	13.66	8.58	5.02	13.60	56.15	2.44	3.91	49.80
SCT5-1.70	170	C	clay	40.58	0.60	4.21	20.78	10.59	4.40	8.24	51.03	1.24	1.48	48.31
SCT5-6.29	629		loamy sand	79.36	0.49	1.51	13.23	56.57	7.56	12.11	8.28	1.96	1.39	4.93

table 5.xls

Profile ID	Basal Depth (cm)	Horizon ID	Sample Description	>2-mm Fraction (%)	<2-mm Average Fraction (%)	<2-mm SD (n=2) (%)
SCT2 1.5	5	A	Darkened topsoil with many roots	21.43	0.1705	-
SCT2 1.13	13	A	Darkened topsoil with many roots	40.00	0.0753	-
SCT2 1.39	39	A	Dark topsoil with roots	43.75	0.0289	0.0006
SCT2 1.50	50	AB	Dark, plastic subsoil with roots	45.28	0.0248	-
SCT2 1.68	68	AB	Dark, plastic subsoil with roots	23.08	0.0266	-
SCT2 1.88	88	B	Slightly mottled subsoil with roots	0.00	0.0139	0.0091
SCT2 1.100	100	B	Glayed, gray subsoil with roots	0.00	0.0075	0.0006
SCT2 2.12	12	A	Topsoil rooting zone	-	-	-
SCT2 2.22	22	A	Topsoil rooting zone	-	-	-
SCT2 2.44	44	AB	Horizon with topsoil and mineral mixing	-	-	-
SCT2 2.65	65	B	Mineral horizon with Fe concretions	-	-	-
SCT2 2.85	85	B	Mineral horizon with Fe stains, nodules and redox features	-	-	-
SCT2 2.100	100	B	Mineral horizon with redoxy morphic features	-	-	-
SCT3 1.5	5	A	Dark topsoil with many roots	24.18	0.0635	-
SCT3 1.10	10	A	Dark topsoil with many roots	19.97	0.0347	-
SCT3 1.20	20	A	Dark topsoil with many roots	20.87	0.0397	0.0101
SCT3 1.30	30	AB	Dark subsoil w/ nodules from above and roots	22.22	0.0443	0.0145
SCT3 1.55	55	AB	Dark subsoil w/ nodules from below and roots	27.87	0.0421	-
SCT3 1.70	70	B	Mottled subsoil with feldspar, clay films and roots	26.37	0.0349	-
SCT3 1.90	90	B	Dark subsoil with few pebbles and roots	0.68	0.0203	0.0128
SCT3 1.100	100	B	Highly mottled subsoil	1.03	0.0340	0.0052
SCT4 1.10	10	A	Dark topsoil with roots	40.69	0.3205	0.0191
SCT4 1.20	20	AB	Dark topsoil with roots	31.51	0.3995	-
SCT4 1.28	28	AB	Dark topsoil with roots	33.39	0.3873	0.1095
SCT4 1.40	40	B	Dark subsoil with clay films and roots	31.20	0.2277	0.1286
SCT4 1.60	60	B	Dark subsoil with clay films and roots	7.86	0.1725	0.0034
SCT4 1.80	80	B	Dark subsoil with mottling and roots on ped faces	0.00	0.1120	-
SCT4 1.100	100	B	Dark subsoil with mottling	0.00	0.1135	-

table 5.xls

Profile ID	Basal Depth (cm)	Horizon ID	Sample Description	>2-mm Fraction (%)	<2-mm Average Fraction (%)	<2-mm SD (n=2) (%)	
SCT5 1.10	10	A	Dark topsoil with roots	20.93	0.0629	0.0010	
SCT5 1.20	20	A	Dark topsoil with roots	19.21	0.0419	-	
SCT5 1.37	37	AB	Dark subsoil with roots	20.68	0.0975	0.0133	
SCT5 1.55	55	B	Dark subsoil w/red pebbles and v.fine roots along ped faces	13.08	0.0322	0.0025	
SCT5 1.80	80	B	Dark subsoil with clay films, common red pebbles	3.23	0.0203	-	
SCT5 1.100	100	B	Dark subsoil with common v.fine roots along ped faces	0.00	0.0293	-	
						Average SD	0.0291

table 6.xls

Terrace	Sample ID	Basal Depth (cm)	Description Interval (cm)	Site Location	Sample Description	Roots Present	Dry Munsell Color	Dry Munsell Color	Dry Munsell Color	Texture	Stickiness	Plasticity	
	Wilder beach	10	0-10		Colorful beach sand, pH=7.2	none	10YR7/2			sand	not sticky	not plastic	
	SCT1	1a.20	20	0-6	By corner of Pelton and Eucalytus, go into park through	Brown topsoil with sm piece of concrete, roots	very fine, fine, medium	10YR6/2		loam	slightly sticky	slightly plastic	
	SCT1	1a.35	35	20-27	Monach resting area, go left, go between trees look for	Brown topsoil, roots	fine	10YR5/3		loam	slightly sticky	slightly plastic	
	SCT1	1a.58	58	47-58	sight on right, may be a path. Auger description of gas	Brown subsoil with few small pebbles	none	10YR4/4		loam	slightly sticky	slightly plastic	
	SCT1	1a.67	67	58-67	sampler hole.	Light brown subsoil	none	10YR4/4	10YR5/6	silt loam	slightly sticky	slightly plastic	
	SCT1	1a.90	90	67-78		Light brown subsoil	none	10YR6/3	10YR5/8	loam	slightly sticky	slightly plastic	
	SCT1	1a.112	112	90-100		Grey brown subsoil	none	10YR7/3	10YR6/8	sandy loam	not sticky	not plastic	
	SCT1	1a.121	121	112-121		Grey brown subsoil with maganese stains	none	10YR7/3	10YR6/8	loam	slightly sticky	slightly plastic	
	SCT1	1a.160	160	121-131		Light brown subsoil	none	10YR6/4		loam	slightly sticky	slightly plastic	
	SCT1	1a.187	187	165-171		Coarse sand, many colors of pebbles, C horizon	none	10YR4/4		loamy sand	not sticky	not plastic	
	SCT1	1a.197	197	187-197		Fine sand, C horizon	none	10YR4/4		sand	not sticky	not plastic	
	SCT1	2a.10	10	0-6	By corner of Pelton and Eucalytus, go into park through	Brown topsoil with roots	very fine, fine, medium	10YR5/2		silt loam	slightly sticky	slightly plastic	
	SCT1	2a.19	19	19-Oct	Monach resting area, go right, on left will be the site.	Dark brown topsoil with roots	fine	10YR3/3		silt loam	slightly sticky	slightly plastic	
	SCT1	2a.45	45	19-30	Auger description of 8ft water sampler hole.	Dark brown subsoil with small pebbles, roots	fine	10YR4/2		loam	slightly sticky	not plastic	
	SCT1	2a.50	50	40-50		Brown subsoil with roots	fine	10YR5/3		sandy loam	not sticky	not plastic	
	SCT1	2a.74	74	50-60		Brown subsoil	fine	10YR5/3		clay	very sticky	very plastic	
	SCT1	2a.92	92	74-84		Dark brown subsoil	none	10YR4/3		clay	very sticky	very plastic	
	SCT1	2a.104	104	92-96		Yellow, brown subsoil with sm lenses of red, brown	none	10YR5/6	7.5YR3/4	clay loam	sticky	plastic	
	SCT1	2a.118	118	104-109		Very gritty, brown subsoil	none	10YR5/6		sandy loam	not sticky	slightly plastic	
	SCT1	2a.142	142	118-123		Brown subsoil with maganese	none	10YR5/6		sandy loam	not sticky	not plastic	
	SCT1	2a.172	172	142-152		Brown subsoil	none	10YR5/4		sandy loam	not sticky	not plastic	
	SCT1	2a.183	183	172-183		Brown subsoil	none	10YR4/4		sandy loam	not sticky	not plastic	
	SCT1	2a.195	195	183-195		Brown C horizon	none	10YR4/4		loamy sand	not sticky	not plastic	
	SCT1	2a.202	202	195-202		Dark brown C horizon	none	10YR2/3 wet		loamy sand	not sticky	not plastic	
	SCT2	1a.23	23	0-11	South of sample enclosure in Wilder Ranch, augar site	Brown topsoil with roots	fine, medium	10YR4/3		silt loam	not sticky	slightly plastic	
	SCT2	1a.45	45	23-36	1, annual grass	Brown topsoil with roots	fine	10YR4/6		silt loam	slightly sticky	slightly plastic	
	SCT2	1a.54	54	45-54		Brown subsoil with small pebbles	none	10YR5/6		silt loam	slightly sticky	plastic	
	SCT2	1a.84	84	54-63		Brown, orange subsoil	none	10YR6/8	10YR 4/4	silt clay loam	sticky	plastic	
	SCT2	1a.112	112	84-94		Grey, orange subsoil with feldspar and pebbles	none	10YR4/1	10YR6/8	silt clay loam	sticky	very plastic	
	SCT2	1a.139	139	112-123		Grey, orange subsoil with feldspar	none	10YR6/8	10YR4/1	silt clay loam	sticky	plastic	
	SCT2	1a.152	152	139-145		Orange, gritty subsoil	none	10YR5/8		clay loam	sticky	plastic	
	SCT2	1a.171	171	152-160		Orange subsoil	none	7.5YR6/6		clay loam	sticky	plastic	
	SCT2	1a.192	192	171-180		Orange, grey subsoil	none	10YR7/8		clay loam	sticky	plastic	
	SCT2	1a.199	199	182-199		Orange, grey subsoil	none	10YR7/8		loam	slightly sticky	slightly plastic	
	SCT2	2a.13	13	0-13	North of sample enclosure ~2m, on east side	Brown topsoil with roots	very fine, fine, medium	10YR5/3		loam	slightly sticky	slightly plastic	
	SCT2	2a.34	34	13-24		Brown topsoil with roots	very fine, fine, medium	10YR4/4		loam	slightly sticky	slightly plastic	
	SCT2	2a.51	51	34-43		Dark brown topsoil with few small pebbles, roots	fine	10YR5/4	10YR3/4	loam	slightly sticky	slightly plastic	
	SCT2	2a.66	66	51-58		Brown subsoil with roots	very fine	10YR5/6		clay loam	slightly sticky	plastic	
	SCT2	2a.86	86	66-76		Brown, orange subsoil	none	10YR5/6	7.5YR5/8	clay loam	sticky	plastic	
	SCT2	2a.103	103	86-94		Orange, brown, grey subsoil with small pebbles	none	10YR4/3	7.5YR5/8	clay	very sticky	very plastic	
	SCT2	2a.115	115	103-111		Orange, grey subsoil with lots of chalky feldspar	none	10YR5/1	7.5YR5/8	clay	very sticky	very plastic	
	SCT2	2a.145	145	115-127		Grey, orange subsoil with lots of chalky feldspar	none	10YR5/8	7.5YR7/2	clay	very sticky	very plastic	
	SCT2	2a.181	181	145-155		Grey, orange, lt.brown subsoil with lots of chalky feldpar	none	10YR5/8, 5/4	7.5YR7/2	clay	very sticky	very plastic	
	SCT2	2a.191	191	181-189		Light brown, orange subsoil	none	10YR 5/6	7.5YR7/2	clay loam	sticky	plastic	
	SCT2	2a.200	200	191-200		Light brown subsoil	none	10YR5/6		clay loam	sticky	plastic	
	SCT3	1a.26	26	0-9	North ~3m of sample enclosure	Light brown topsoil with roots, a few small pebbles	very fine, fine, medium	10YR5/3		silt loam	slightly sticky	slightly plastic	
	SCT3	1a.45	45	26-37		Yellow brown subsoil w/medium(2cmwide) nodules, roots	very fine, fine, medium	10YR5/6		silt loam	slightly sticky	slightly plastic	
	SCT3	1a.56	56	45-48		Orange, brown subsoil with few small pebbles, roots	very fine	10YR5/8		silt clay loam	slightly sticky	plastic	
	SCT3	1a.70	70	56-60		Brown, orange, grey subsoil	none	10YR5/4	10YR5/1	clay loam	sticky	plastic	
	SCT3	1a.84	84	70-80		Brown, orange, grey, red subsoil	none	10YR4/4 5/1	7.5YR5/8	clay loam	sticky	plastic	
	SCT3	1a.110	110	84-91		Orange, grey subsoil with lots of chalky spots	none	10YR4/1	7.5YR5/8	clay	sticky	very plastic	
	SCT3	1a.142	145	110-117		Orange, grey, red subsoil with lots of chalky spots	none	7.5YR5/1	7.5YR5/8	clay	sticky	very plastic	
	SCT3	1a.150	150	142-147		Orange, grey subsoil with white chalky spots	none	7.5YR5/8	2.5Y4/1	Blue grey	clay loam	sticky	plastic
	SCT3	1a.160	160	150-152		Orange, brown, grey subsoil with white chalky spots	none	10YR5/4	10YR6/1	clay loam	sticky	very plastic	
	SCT3	1a.184	184	160-164		Orange, brown, grey subsoil	none	10YR4/6	10YR6/1	clay loam	sticky	plastic	
	SCT3	1a.200	200	184-190		Orange, brown subsoil	none	7.5YR4/6		clay loam	sticky	plastic	

table 6.xls

Terrace	Sample ID	Basal Depth (cm)	Description Interval (cm)	Site Location	Sample Description	Roots Present	Dry Munsell Color	Dry Munsell Color	Dry Munsell Color	Texture	Stickiness	Plasticity	
SCT3	2a.32	32	21-Oct	East ~5m of sample enclosure	Brown topsoil with roots	very fine, fine	10YR4/4			silt loam	slightly sticky	slightly plastic	
SCT3	2a.40	40	32-40		Brown topsoil with lots of pebbles, roots	very fine, fine	10YR4/4			silt loam	slightly sticky	slightly plastic	
SCT3	2a.57	57	40-50		Yellow, brown subsoil with roots	very fine	10YR5/6			silt loam	slightly sticky	slightly plastic	
SCT3	2a.78	78	57-64		Brown subsoil, large nodules at 78cm, roots	fine	10YR5/4	10YR6/8		silt clay loam	sticky	plastic	
SCT3	2a.90	90	78-87		Dark brown, orange subsoil with small pebbles	none	10YR4/4	10YR3/2	7.5YR5/8	clay	sticky	plastic	
SCT3	2a.107	107	90-97		Orange, red, grey subsoil with small pebbles	none	10YR5/1	10YR5/8	5YR3/6	clay	very sticky	very plastic	
SCT3	2a.117	117	107-111		Grey, orange, red subsoil, at 113cm-chalky feldspar	none	2.5YR4/8	2.5YR4/1	7.5YR5/8	clay	very sticky	very plastic	
SCT3	2a.140	140	117-126		Brown, orange subsoil with lots of small pebbles	none	10YR5/1	7.5YR5/8		clay	very sticky	very plastic	
SCT3	2a.160	150	140-150		Brown, red subsoil	none	10YR5/1	2.5YR3/6		clay	very sticky	very plastic	
SCT3	2a.190	190	160-168		Red subsoil with small pebbles	none	5YR4/6			clay loam	sticky	plastic	
SCT3	2a.203	203	190-193	Brown, orange subsoil with small pebbles and nodules	none	10YR5/4	7.5YR4/6		clay loam	sticky	plastic		
SCT3	3a.17	17	0-10	5 m north of sample enclosure. Annual grass and oaks	Brown topsoil with roots and small pebbles	very fine, fine	10YR4/4			silt loam	slightly sticky	slightly plastic	
SCT3	3a.28	28	17-28		Brown topsoil with roots	very fine	10YR5/8			silt loam	slightly sticky	slightly plastic	
SCT3	3a.40	40	28-36		Brown subsoil with small pebbles, nodules, roots	very fine	10YR5/6			silt loam	slightly sticky	slightly plastic	
SCT3	3a.63	63	40-53		Brown, orange subsoil with roots	very fine	10YR5/4	7.5YR5/8		silt clay loam	sticky	plastic	
SCT3	3a.72	72	63-68		Brown, orange subsoil with small pebbles, nodules, roots	very fine	10YR6/4	7.5YR5/8		clay	very sticky	very plastic	
SCT3	3a.84	84	72-80		Brown, orange subsoil w/white chalky feldspar and sm.pebbles	none	10YR5/1	7.5YR5/8		clay	very sticky	very plastic	
SCT3	3a.95	95	84-91		Grey, orange subsoil	none	10YR4/1	7.5YR5/8		clay	very sticky	very plastic	
SCT3	3a.110	110	95-100		Grey, brown, orange subsoil	none	10YR4/1	10YR6/8 5/4	7.5YR5/8	clay	very sticky	very plastic	
SCT3	3a.128	128	110-117		Brown, red, orange subsoil, at 112cm white chalky feldspar	none	10YR5/1	5YR4/8	7.5YR5/8	silt clay loam	sticky	plastic	
SCT3	3a.150	150	128-150		Brown, red, orange subsoil	none	10YR6/1	5YR4/8	7.5YR5/8	silt clay loam	sticky	plastic	
SCT4	1a.24	24	0-12	South of sample enclosure in Wilder Ranch, augar site 1, brush, little annual grass	Light brown topsoil with roots	fine, medium	10YR4/4			loam	not sticky	slightly plastic	
SCT4	1a.45	45	24-36		Light brown topsoil with roots	fine	7.5YR4/6			loam	not sticky	slightly plastic	
SCT4	1a.54	54	45-54		Orange, brown subsoil with sm pebbles	none	10YR4/6			loam	not sticky	slightly plastic	
SCT4	1a.74	74	54-64		Orange, red subsoil	none	2.5YR3/4	7.5YR4/6		silt loam	sticky	plastic	
SCT4	1a.110	110	74-83		Orange, red, grey subsoil	none	2.5YR3/4	2.5YR5/2	7.5YR4/6	silt loam	sticky	plastic	
SCT4	1a.135	135	110-118		Reddish, orange, grey subsoil	none	10YR6/1	2.5YR3/6	5YR4/6	silt clay loam	sticky	very plastic	
SCT4	1a.157	157	135-147		Grey, red, orange subsoil few sm pebbles	none	10YR6/1	2.5YR3/6	5YR4/6	silty clay	sticky	very plastic	
SCT4	1a.171	171	157-166		Orange, grey, red subsoil	none	7.5YR5/8	10YR7/1	2.5YR3/6	silt clay loam	sticky	plastic	
SCT4	1a.195	195	171-182		Orange, grey, red subsoil	none	7.5YR5/8	10YR7/1	2.5YR3/6	silt clay loam	sticky	plastic	
SCT4	1a.204	204	195-204		Orange, grey subsoil with chalky feldspar	none	10YR6/6	10YR7/1		nd	sticky	plastic	
SCT4	2a.29	29	0-13	East of sample enclosure in Wilder Ranch, augar site 2, brush, little annual grass	Light brown topsoil with roots	fine, medium	10YR4/4			loam	not sticky	not plastic	
SCT4	2a.46	46	29-39		Brown topsoil with roots	very fine	10YR4/6			loam	not sticky	slightly plastic	
SCT4	2a.64	64	46-56		Orange, brown, red subsoil with sm pebbles	very fine	10YR5/6			silt loam	slightly sticky	slightly plastic	
SCT4	2a.81	81	64-74		Brown subsoil with feldspar pebbles	none	10YR4/6	10YR5/6	5YR5/8	silt loam	slightly sticky	slightly plastic	
SCT4	2a.106	106	81-90		Orange, grey subsoil with lots of sm, grained pebbles	none	10YR5/1	7.5YR5/8		silt clay loam	sticky	plastic	
SCT4	2a.125	125	106-114		Red, orange, grey subsoil with lots of pebbles	none	2.5YR3/6	10YR7/1		silt loam	slightly sticky	slightly plastic	
SCT4	2a.135	135	125-135		Gritty red C horizon with small area of yellow	none	5YR4/8	2.5Y8/6		sandy loam	not sticky	not plastic	
SCT4	2a.137	137			Hit a rock								
SCT4	3a.17	17	0-10		North of sample enclosure. Trees (oaks), brush, small annual grass	Light brown topsoil with roots	very fine, fine	10YR4/4			loam	slightly sticky	not plastic
SCT4	3a.30	30	17-26			Brown subsoil with small pebbles, wood piece, roots	medium	10YR5/6			loam	slightly sticky	slightly plastic
SCT4	3a.40	40	30-40	Brown subsoil with small amounts of Fe stains, roots		fine	10YR4/6			loam	slightly sticky	slightly plastic	
SCT4	3a.63	63	40-48	Brown, orange subsoil with roots, small nodules		very fine	10YR4/6			clay loam	sticky	plastic	
SCT4	3a.88	88	63-74	Grey, orange, red subsoil with lots of small pebbles		none	10YR4/2	10YR5/8	5YR4/8	clay loam	sticky	plastic	
SCT4	3a.100	100	88-95	Orange, grey, red subsoil with thin clay films		none	10YR5/1	5YR5/8	7YR5/8	clay	very sticky	very plastic	
SCT4	3a.109	109	100-109	Orange, red, grey subsoil		none	10YR6/1	2.5YR5/8	7YR5/8	clay	very sticky	very plastic	
SCT4	3a.140	140	109-114	Red, orange, grey subsoil with small pebbles		none	10YR6/1	5YR4/8	10YR6/8	clay	very sticky	very plastic	
SCT4	3a.170	170	140-147	Red, grey, yellow, orange subsoil with coarse roots at 157cm		none	10YR6/1	5YR4/8	2.5YR7/8	clay	very sticky	very plastic	
SCT4	3a.198	198	170-175	Orange, grey, subsoil with a small rock		none	10YR7/1	10YR6/8		clay loam	sticky	plastic	
SCT4	3a.206	206	198-206	Orange, grey subsoil with small rocks	none	10YR7/1	10YR6/8		clay loam	sticky	plastic		
SCT5	1a.24	24	0-12	Site off Backbranch Rd, ~1meter southwest of sampler W30	Dark brown topsoil with roots	very fine, fine	10YR3/3			silt loam	not sticky	slightly plastic	
SCT5	1a.45	45	24-37		Dark brown topsoil with roots	fine	10YR4/4			silt loam	not sticky	slightly plastic	
SCT5	1a.60	60	45-54		Light brown subsoil with orange, red areas and roots	fine	10YR5/6	10YR4/3	2.5YR4/8	silt clay loam	sticky	plastic	
SCT5	1a.87	87	60-66		Grey, orange, red subsoil with thin clay films, roots	very fine	10YR4/2	2.5YR4/8	7.5YR6/8	silt clay loam	sticky	very plastic	
SCT5	1a.114	114	87-96		Grey, orange, red subsoil with thin clay films, roots	very fine	10YR5/1	7.5YR5/8	2.5YR4/8	silt clay loam	sticky	very plastic	
SCT5	1a.133	133	114-120		Grey, orange, red subsoil with roots	very fine	2.5YR3/6	7.5YR5/8	10YR5/1, 6/1	clay loam	sticky	very plastic	
SCT5	1a.149	149	133-140		Grey, orange subsoil	none	10YR5/1	10YR6/1	7.5YR5/8	clay loam	sticky	very plastic	
SCT5	1a.177	177	149-152		Loose orange, grey subsoil	none	10YR7/1	10YR6/8		loam	slightly sticky	plastic	
SCT5	1a.193	193	177-182		Orange, grey with some cemented grey areas, C horizon	none	10YR6/8	10YR7/1		sandy loam	not sticky	not plastic	
SCT5	1a.200	200	193-200		Orange, grey C horizon	none	10YR6/8	10YR7/1		sandy loam	not sticky	not plastic	

table 6.xls

Terrace	Sample ID	Basal Depth (cm)	Description Interval (cm)	Site Location	Sample Description	Roots Present	Dry Munsell Color	Dry Munsell Color	Dry Munsell Color	Texture	Stickiness	Plasticity
SCT5	2a.16	16	0-10	Site off Backranch Rd, ~5meter north of drip rain guage	Brown topsoil with few nodules, roots	very fine, medium	10YR4/3			loam	slightly sticky	plastic
SCT5	2a.34	34	16-23		Brown topsoil with few nodules, roots	fine	10YR4/4			loam	slightly sticky	slightly plastic
SCT5	2a.55	55	34-42		Brown, red subsoil with roots	very fine	10YR4/4	10YR4/8		silt clay loam	slightly sticky	slightly plastic
SCT5	2a.66	66	51-61		Brown, orange subsoil with roots	very fine	10YR3/2	10YR5/8		silt clay loam	slightly sticky	slightly plastic
SCT5	2a.85	85	66-71		Brown, red, orange subsoil with thin clay films, roots	very fine	10YR3/2	7.5YR5/8	5YR3/2	silt clay loam	slightly sticky	slightly plastic
SCT5	2a.111	111	85-94		Grey, orange, red subsoil with thin clay films, roots	very fine	10YR5/1	7.5YR5/8	5YR3/2	silty clay	sticky	very plastic
SCT5	2a.135	135	111-121		Grey, orange, red subsoil	none	10YR5/1	7.5YR5/8	5YR3/2	silt clay	sticky	very plastic
SCT5	2a.166	166	135-145		Loose orange subsoil with patches of grey	none	10YR7/1	7.5YR5/8		loam	slightly sticky	slightly plastic
SCT5	2a.172	172	166-172		Orange subsoil with few nodules	none	7.5YR5/8			loam	slightly sticky	slightly plastic
SCT5	2a.190	190	172-177	Loose orange C horizon	none	7.5YR5/8			sandy loam	slightly sticky	not plastic	
SCT5	3a.30	30	0-10	Site off Backranch Rd, ~10meter south of temsiometers	Brown topsoil with roots and nodules	very fine, fine	10YR3/3			loam	slightly sticky	slightly plastic
SCT5	3a.45	45	30-36		Dark brown subsoil with nodules, clay films(?), roots	very fine	10YR2/3			silt loam	slightly sticky	not plastic
SCT5	3a.60	60	45-53		Brown subsoil with thin clay films, roots	very fine	10YR4/4			silt clay loam	sticky	plastic
SCT5	3a.81	81	60-65		Brown, orange, red subsoil with thin clay films, roots	very fine	10YR5/4	2.5YR3/6		silt clay loam	sticky	plastic
SCT5	3a.108	108	81-85		Grey, orange, red subsoil with thin clay films	very fine	10YR5/1	2.5YR3/6	10YR5/8	silt clay loam	sticky	plastic
SCT5	3a.139	139	108-111		Grey, orange, red subsoil with thin clay films	very fine	10YR5/1	2.5YR3/6	10YR5/8	clay	very sticky	very plastic
SCT5	3a.155	155	139-146		Grainy grey, orange subsoil	none	7.5YR5/8	10YR7/1	10YR4/1	loam	slightly sticky	slightly plastic
SCT5	3a.186	186	155-166		Loose orange subsoil	none	10YR6/8	10YR7/1		loam	slightly sticky	slightly plastic
SCT5	3a.199	199	186-193		Loose orange C horizon	none	10YR6/8	10YR7/1		sandy loam	not sticky	not plastic

table 7.xls

Quantified soil field properties												
Terrace	<i>SCT1-1a</i>											
Basal Depth (cm)	20	35	47	58	67	90	112	121	160	187	197	
Thickness (cm)	20	15	12	11	9	23	22	9	39	27	10	
Texture	50	50	0	50	60	50	20	50	50	10	0	
Rubification	0	20	40	40	60	70	70	70	40	40	40	
Melanization	20	40	60	60	50	30	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data												
Texture	0.56	0.56	0.00	0.56	0.67	0.56	0.22	0.56	0.56	0.11	0.00	
Rubification	0.00	0.11	0.21	0.21	0.32	0.37	0.37	0.37	0.21	0.21	0.21	
Melanization	0.29	0.57	0.86	0.86	0.71	0.43	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Index Results												
Sum normalized properites	0.84	1.23	1.07	1.62	1.70	1.35	0.59	0.92	0.77	0.32	0.21	
Horizon Index (n=3)	0.28	0.41	0.36	0.54	0.57	0.45	0.30	0.46	0.38	0.16	0.11	
Index-cm of development	5.61	6.16	4.27	5.95	5.09	10.37	6.50	4.16	14.94	4.34	1.05	
Index-cm of soil profile	68.44		Average index / cm									0.35

Quantified soil field properties														
Terrace	<i>SCT1-2a</i>													
Basal Depth (cm)	10	19	45	50	74	92	104	118	142	172	183	195	202	
Thickness (cm)	10	9	26	5	24	18	12	14	24	30	11	12	7	
Texture	60	60	40	20	120	120	100	30	20	20	20	10	10	
Rubification	0	20	0	20	20	20	70	80	80	40	40	40	20	
Melanization	40	80	60	40	40	60	-	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data														
Texture	0.67	0.67	0.44	0.22	1.33	1.33	1.11	0.33	0.22	0.22	0.22	0.11	0.11	
Rubification	0.00	0.11	0.00	0.11	0.11	0.11	0.37	0.42	0.42	0.21	0.21	0.21	0.11	
Melanization	0.57	1.14	0.86	0.57	0.57	0.86	-	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	-	-	
Index Results														
Sum normalized properites	1.24	1.91	1.30	0.90	2.01	2.30	1.48	0.75	0.64	0.43	0.43	0.32	0.22	
Horizon Index (n=3)	0.41	0.64	0.43	0.30	0.67	0.77	0.74	0.38	0.32	0.22	0.22	0.16	0.11	
Index-cm of development	4.13	5.74	11.28	1.50	16.08	13.77	8.88	5.28	7.72	6.49	2.38	1.93	0.76	
Index-cm of soil profile	85.94		Average index / cm											0.43

Quantified soil field properties												
Terrace	<i>SCT2-1a</i>											
Basal Depth (cm)	23	45	54	84	112	139	152	171	192	199		
Thickness (cm)	23	22	9	30	28	27	13	19	21	7		
Texture	50	60	70	90	100	90	80	80	80	50		
Rubification	20	80	80	80	70	70	120	100	120	120		
Melanization	60	60	40	40	-	-	-	-	-	-		
pH	-	-	-	-	-	-	-	-	-	-		
Normalized Data												
Texture	0.56	0.67	0.78	1.00	1.11	1.00	0.89	0.89	0.89	0.56		
Rubification	0.11	0.42	0.42	0.42	0.37	0.37	0.63	0.53	0.63	0.63		
Melanization	0.86	0.86	0.57	0.57	-	-	-	-	-	-		
pH	-	-	-	-	-	-	-	-	-	-		
Index Results												
Sum normalized properites	1.52	1.94	1.77	1.99	1.48	1.37	1.52	1.42	1.52	1.19		
Horizon Index (n=3)	0.51	0.65	0.59	0.66	0.74	0.68	0.76	0.71	0.76	0.59		
Index-cm of development	11.64	14.26	5.31	19.92	20.71	18.47	9.88	13.44	15.96	4.15		
Index-cm of soil profile	133.77		Average index / cm									0.67

Quantified soil field properties												
Terrace	<i>SCT2-2a</i>											
Basal Depth (cm)	13	34	51	66	86	103	115	145	181	191	200	
Thickness (cm)	13	21	17	15	20	17	12	30	36	10	9	
Texture	50	50	50	70	80	120	120	120	120	80	80	
Rubification	20	40	40	80	110	80	80	90	90	50	80	
Melanization	40	60	60	40	40	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data												
Texture	0.56	0.56	0.56	0.78	0.89	1.33	1.33	1.33	1.33	0.89	0.89	
Rubification	0.11	0.21	0.21	0.42	0.58	0.42	0.42	0.47	0.47	0.26	0.42	
Melanization	0.57	0.86	0.86	0.57	0.57	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Index Results												
Sum normalized properites	1.23	1.62	1.62	1.77	2.04	1.75	1.75	1.81	1.81	1.15	1.31	
Horizon Index (n=3)	0.41	0.54	0.54	0.59	0.68	0.88	0.88	0.90	0.90	0.58	0.65	
Index-cm of development	5.34	11.36	9.20	8.85	13.60	14.91	10.53	27.11	32.53	5.76	5.89	
Index-cm of soil profile	145.07			Average index / cm								0.73

Quantified soil field properties								
Terrace	<i>SCT2-1</i>							
Basal Depth (cm)	5	13	39	50	68	88	100	
Thickness (cm)	5	8	26	11	18	20	12	
Texture	30	30	50	80	80	70	90	
Rubification	20	20	0	80	80	80	80	
Melanization	80	80	80	60	60	50	50	
pH	1.2	1.2	1.7	0.2	0.2	0.2	0.2	
Normalized Data								
Texture	0.33	0.33	0.56	0.89	0.89	0.78	1.00	
Rubification	0.11	0.11	0.00	0.42	0.42	0.42	0.42	
Melanization	1.14	1.14	1.14	0.86	0.86	0.71	0.71	
pH	0.3	0.3	0.5	0.1	0.1	0.1	0.1	
Index Results								
Sum normalized properites	1.92	1.92	2.18	2.22	2.22	1.97	2.19	
Horizon Index (n=4)	0.48	0.48	0.55	0.56	0.56	0.49	0.55	
Index-cm of development	2.41	3.85	14.20	6.12	10.01	9.85	6.58	
Index-cm of soil profile	53.01			Average index / cm				0.53

Quantified soil field properties							
Terrace	<i>SCT2-2</i>						
Basal Depth (cm)	12	22	44	65	85	100	
Thickness (cm)	12	10	22	21	20	15	
Texture	50	50	50	70	80	40	
Rubification	10	0	30	50	60	80	
Melanization	40	40	40	60	40	50	
pH	-	-	-	-	-	-	
Normalized Data							
Texture	0.56	0.56	0.56	0.78	0.89	0.44	
Rubification	0.08	0.00	0.25	0.42	0.50	0.67	
Melanization	0.33	0.33	0.33	0.50	0.33	0.42	
pH	-	-	-	-	-	-	
Index Results							
Sum normalized properites	0.97	0.89	1.14	1.69	1.72	1.53	
Horizon Index (n=3)	0.32	0.30	0.38	0.56	0.57	0.51	
Index-cm of development	3.89	2.96	8.35	11.86	11.48	7.64	
Index-cm of soil profile	46.19			Average index / cm			0.46

table 7.xls

Quantified soil field properties												
Terrace	<i>SCT3-1a</i>											
Basal Depth (cm)	26	45	56	70	84	110	145	150	160	184	200	
Thickness (cm)	26	19	11	14	14	26	35	5	10	24	16	
Texture	60	60	80	80	80	110	110	80	90	80	80	
Rubification	20	80	120	40	90	80	100	110	80	80	100	
Melanization	40	40	40	40	50	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data												
Texture	0.67	0.67	0.89	0.89	0.89	1.22	1.22	0.89	1.00	0.89	0.89	
Rubification	0.17	0.67	1.00	0.33	0.75	0.67	0.83	0.92	0.67	0.67	0.83	
Melanization	0.33	0.33	0.33	0.33	0.42	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Index Results												
Sum normalized properites	1.17	1.67	2.22	1.56	2.06	1.89	2.06	1.81	1.67	1.56	1.72	
Horizon Index (n=3)	0.39	0.56	0.74	0.52	0.69	0.94	1.03	0.90	0.83	0.78	0.86	
Index-cm of development	10.11	10.56	8.15	7.26	9.59	24.56	35.97	4.51	8.33	18.67	13.78	
Index-cm of soil profile	151.49			Average index / cm								0.76

Quantified soil field properties												
Terrace	<i>SCT3-2a</i>											
Basal Depth (cm)	32	40	57	78	90	107	117	140	150	190	203	
Thickness (cm)	32	8	17	21	12	17	10	23	10	40	13	
Texture	60	60	60	90	100	120	120	120	120	80	80	
Rubification	40	40	80	80	70	90	110	80	80	120	70	
Melanization	60	60	40	30	60	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data												
Texture	0.67	0.67	0.67	1.00	1.11	1.33	1.33	1.33	1.33	0.89	0.89	
Rubification	0.33	0.33	0.67	0.67	0.58	0.75	0.92	0.67	0.67	1.00	0.58	
Melanization	0.50	0.50	0.33	0.25	0.50	-	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Index Results												
Sum normalized properites	1.50	1.50	1.67	1.92	2.19	2.08	2.25	2.00	2.00	1.89	1.47	
Horizon Index (n=3)	0.50	0.50	0.56	0.64	0.73	1.04	1.13	1.00	1.00	0.94	0.74	
Index-cm of development	16.00	4.00	9.44	13.42	8.78	17.71	11.25	23.00	10.00	37.78	9.57	
Index-cm of soil profile	160.94			Average index / cm								0.79

Quantified soil field properties												
Terrace	<i>SCT3-3a</i>											
Basal Depth (cm)	17	28	40	63	72	84	95	110	128	150		
Thickness (cm)	17	11	12	23	9	12	11	15	18	22		
Texture	60	60	60	90	120	120	120	120	80	80		
Rubification	40	120	80	90	90	80	80	80	90	90		
Melanization	60	40	40	40	30	40	50	-	-	-		
pH	-	-	-	-	-	-	-	-	-	-		
Normalized Data												
Texture	0.67	0.67	0.67	1.00	1.33	1.33	1.33	1.33	0.89	0.89		
Rubification	0.33	1.00	0.67	0.75	0.75	0.67	0.67	0.67	0.75	0.75		
Melanization	0.50	0.33	0.33	0.33	0.25	0.33	0.42	-	-	-		
pH	-	-	-	-	-	-	-	-	-	-		
Index Results												
Sum normalized properites	1.50	2.00	1.67	2.08	2.33	2.33	2.42	2.00	1.64	1.64		
Horizon Index (n=3)	0.50	0.67	0.56	0.69	0.78	0.78	0.81	1.00	0.82	0.82		
Index-cm of development	8.50	7.33	6.67	15.97	7.00	9.33	8.86	15.00	14.75	18.03		
Index-cm of soil profile	111.44			Average index / cm								0.74

Quantified soil field properties									
Terrace	<i>SCT3-1</i>								
Basal Depth (cm)	5	10	20	30	55	70	90	100	
Thickness (cm)	5	5	10	10	25	15	20	10	
Texture	50	50	50	50	60	80	80	90	
Rubification	10	10	20	20	30	75	60	100	
Melanization	60	50	50	60	40	40	40	40	
pH	1.7	1.6	1.4	1.6	1.4	1.6	1.5	1.8	
Normalized Data									
Texture	0.56	0.56	0.56	0.56	0.67	0.89	0.89	1.00	
Rubification	0.08	0.08	0.17	0.17	0.25	0.63	0.50	0.83	
Melanization	0.50	0.42	0.42	0.50	0.33	0.33	0.33	0.33	
pH	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.5	
Index Results									
Sum normalized properites	1.62	1.51	1.54	1.68	1.65	2.30	2.15	2.68	
Horizon Index (n=4)	0.41	0.38	0.38	0.42	0.41	0.58	0.54	0.67	
Index-cm of development	2.03	1.89	3.85	4.20	10.31	8.64	10.75	6.70	
Index-cm of soil profile	48.38		Average index / cm						0.48

Quantified soil field properties										
Terrace	<i>SCT4-1a</i>									
Basal Depth (cm)	24	45	54	74	110	135	157	171	195	204
Thickness (cm)	24	21	9	20	36	25	22	14	24	9
Texture	40	40	40	80	80	100	110	90	90	90
Rubification	40	100	80	100	80	80	80	100	100	50
Melanization	60	60	60	70	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Normalized Data										
Texture	0.44	0.44	0.44	0.89	0.89	1.11	1.22	1.00	1.00	1.00
Rubification	0.33	0.83	0.67	0.83	0.67	0.67	0.67	0.83	0.83	0.42
Melanization	0.50	0.50	0.50	0.58	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Index Results										
Sum normalized properites	1.28	1.78	1.61	2.31	1.56	1.78	1.89	1.83	1.83	1.42
Horizon Index (n=3)	0.43	0.59	0.54	0.77	0.78	0.89	0.94	0.92	0.92	0.71
Index-cm of development	10.22	12.44	4.83	15.37	28.00	22.22	20.78	12.83	22.00	6.38
Index-cm of soil profile	155.08		Average index / cm						0.76	

Quantified soil field properties							
Terrace	<i>SCT4-2a</i>						
Basal Depth (cm)	29	46	64	81	106	125	135
Thickness (cm)	29	17	18	17	25	19	10
Texture	30	40	60	60	90	80	20
Rubification	40	80	80	120	80	80	150
Melanization	60	60	40	50	-	-	-
pH	-	-	-	-	-	-	-
Normalized Data							
Texture	0.33	0.44	0.67	0.67	1.00	0.89	0.22
Rubification	0.33	0.67	0.67	1.00	0.67	0.67	1.25
Melanization	0.50	0.50	0.33	0.42	-	-	-
pH	-	-	-	-	-	-	-
Index Results							
Sum normalized properites	1.17	1.61	1.67	2.08	1.67	1.56	1.47
Horizon Index (n=3)	0.39	0.54	0.56	0.69	0.83	0.78	0.74
Index-cm of development	11.28	9.13	10.00	11.81	20.83	14.78	7.36
Index-cm of soil profile	85.19		Average index / cm				0.63

Quantified soil field properties												
Terrace	<i>SCT4-3a</i>											
Basal Depth (cm)	17	30	40	63	88	100	109	140	170	198	206	
Thickness (cm)	17	13	10	23	25	12	9	31	30	28	8	
Texture	40	50	50	80	80	120	120	120	120	80	80	
Rubification	40	80	80	80	80	90	100	90	100	70	70	
Melanization	60	40	60	60	50	40	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Normalized Data												
Texture	0.44	0.56	0.56	0.89	0.89	1.33	1.33	1.33	1.33	0.89	0.89	
Rubification	0.33	0.67	0.67	0.67	0.67	0.75	0.83	0.75	0.83	0.58	0.58	
Melanization	0.50	0.33	0.50	0.50	0.42	0.33	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	-	-	
Index Results												
Sum normalized properites	1.28	1.56	1.72	2.06	1.97	2.42	2.17	2.08	2.17	1.47	1.47	
Horizon Index (n=3)	0.43	0.52	0.57	0.69	0.66	0.81	1.08	1.04	1.08	0.74	0.74	
Index-cm of development	7.24	6.74	5.74	15.76	16.44	9.67	9.75	32.29	32.50	20.61	5.89	
Index-cm of soil profile	162.63			Average index / cm								0.79

Quantified soil field properties								
Terrace	<i>SCT4-1</i>							
Basal Depth (cm)	10	20	28	40	60	80	100	
Thickness (cm)	10	10	8	12	20	20	20	
Texture	40	50	70	50	60	80	80	
Rubification	20	55	100	100	130	100	60	
Melanization	60	60	50	50	40	30	20	
pH	1.2	1.2	1.0	1.0	0.6	0.8	0.2	
Normalized Data								
Texture	0.44	0.56	0.78	0.56	0.67	0.89	0.89	
Rubification	0.17	0.46	0.83	0.83	1.08	0.83	0.50	
Melanization	0.50	0.50	0.42	0.42	0.33	0.25	0.17	
pH	0.3	0.3	0.3	0.3	0.2	0.2	0.1	
Index Results								
Sum normalized properites	1.45	1.86	2.31	2.09	2.25	2.20	1.61	
Horizon Index (n=3)	0.36	0.46	0.58	0.52	0.56	0.55	0.40	
Index-cm of development	3.63	4.64	4.63	6.27	11.27	11.00	8.06	
Index-cm of soil profile	49.52			Average index / cm				0.50

Quantified soil field properties							
Terrace	<i>SCT5-1</i>						
Basal Depth (cm)	10	20	37	55	80	100	
Thickness (cm)	10	10	17	18	25	20	
Texture	50	50	50	80	80	80	
Rubification	0	20	35	60	40	50	
Melanization	40	60	75	50	50	50	
pH	1.0	1.0	0.6	1.4	1.6	2.0	
Normalized Data							
Texture	0.56	0.56	0.56	0.89	0.89	0.89	
Rubification	0.00	0.17	0.29	0.50	0.33	0.42	
Melanization	0.33	0.50	0.63	0.42	0.42	0.42	
pH	0.3	0.3	0.2	0.4	0.5	0.6	
Index Results							
Sum normalized properites	1.17	1.51	1.64	2.21	2.10	2.29	
Horizon Index (n=4)	0.29	0.38	0.41	0.55	0.52	0.57	
Index-cm of development	2.94	3.77	6.99	9.93	13.10	11.47	
Index-cm of soil profile	48.19		Average index / cm				0.48

table 7.xls

Quantified soil field properties										
Terrace	<i>SCT5-1a</i>									
Basal Depth (cm)	24	45	60	87	114	133	149	177	193	200
Thickness (cm)	24	21	15	27	27	19	16	28	16	7
Texture	50	50	90	100	100	90	90	60	20	20
Rubification	20	20	130	90	100	100	80	70	70	70
Melanization	80	60	50	40	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Normalized Data										
Texture	0.56	0.56	1.00	1.11	1.11	1.00	1.00	0.67	0.22	0.22
Rubification	0.17	0.17	1.08	0.75	0.83	0.83	0.67	0.58	0.58	0.58
Melanization	0.67	0.50	0.42	0.33	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Index Results										
Sum normalized properites	1.39	1.22	2.50	2.19	1.94	1.83	1.67	1.25	0.81	0.81
Horizon Index (n=3)	0.46	0.41	0.83	0.73	0.97	0.92	0.83	0.63	0.40	0.40
Index-cm of development	11.11	8.56	12.50	19.75	26.25	17.42	13.33	17.50	6.44	2.82
Index-cm of soil profile	135.68	Average index / cm 0.68								

Quantified soil field properties										
Terrace	<i>SCT5-2a</i>									
Basal Depth (cm)	16	34	55	66	85	111	135	166	172	190
Thickness (cm)	16	18	21	11	19	26	24	31	6	18
Texture	60	50	70	70	70	110	110	50	50	30
Rubification	20	40	80	60	80	80	80	80	140	140
Melanization	60	60	60	60	60	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Normalized Data										
Texture	0.67	0.56	0.78	0.78	0.78	1.22	1.22	0.56	0.56	0.33
Rubification	0.17	0.33	0.67	0.50	0.67	0.67	0.67	0.67	1.17	1.17
Melanization	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-
Index Results										
Sum normalized properites	1.33	1.39	1.94	1.78	1.94	1.89	1.89	1.22	1.72	1.50
Horizon Index (n=3)	0.44	0.46	0.65	0.59	0.65	0.94	0.94	0.61	0.86	0.75
Index-cm of development	7.11	8.33	13.61	6.52	12.31	24.56	22.67	18.94	5.17	13.50
Index-cm of soil profile	132.72	Average index / cm 0.70								

Quantified soil field properties										
Terrace	<i>SCT5-3a</i>									
Basal Depth (cm)	30	45	60	81	108	139	155	186	199	
Thickness (cm)	30	15	15	21	27	31	16	31	13	
Texture	50	50	90	90	90	120	50	50	20	
Rubification	20	20	40	90	100	100	80	70	70	
Melanization	80	100	60	60	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	
Normalized Data										
Texture	0.56	0.56	1.00	1.00	1.00	1.33	0.56	0.56	0.22	
Rubification	0.17	0.17	0.33	0.75	0.83	0.83	0.67	0.58	0.58	
Melanization	0.67	0.83	0.50	0.50	-	-	-	-	-	
pH	-	-	-	-	-	-	-	-	-	
Index Results										
Sum normalized properites	1.39	1.56	1.83	2.25	1.83	2.17	1.22	1.14	0.81	
Horizon Index (n=3)	0.46	0.52	0.61	0.75	0.92	1.08	0.61	0.57	0.40	
Index-cm of development	13.89	7.78	9.17	15.75	24.75	33.58	9.78	17.65	5.24	
Index-cm of soil profile	137.58	Average index / cm 0.69								