

A1
Hampshire Minerals Plan
Omission Site 36 : Rookery Farm West,
Agricultural Land Classification
ALC Map and Report
November 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

HAMPSHIRE MINERALS PLAN

OMISSION SITE 36 : ROOKERY FARM WEST

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the county of Hampshire. The work forms part of MAFF's statutory input to the Hampshire Minerals Plan.
- 1.2 Site 36 comprises 25.8 hectares of land to the north-west of Rookery Farm, south east of Alton, Hampshire. An Agricultural Land Classification (ALC) survey was carried out during November 1994. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 28 borings and two soil inspection pits were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land, (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture
- 1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of the survey the land was in a variety of uses most notably for horticulture (a tree nursery) to the south of the site. Elsewhere the land was in maize stubble or permanent grazing.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site
2	9.2	35.7
3a	3.4	13.2
3b	3.8	14.7
4	<u>9.4</u>	<u>36.4</u>
Total area of site	25.8	100%

- 1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in this survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and expected level and consistency of yield.

1.7 Land quality on the site ranges between very good quality, Grade 2, and poor quality, Grade 4. The land has been classified principally on the basis of soil wetness and/or droughtiness limitations. Variable soils were encountered on the site and the grade is determined by the severity of wetness or droughtiness. Soil wetness is overriding where imperfectly drained clayey soils occur. Subgrade 3b and Grade 4 are mapped accordingly. Soil droughtiness may be a problem where lighter topsoils and subsoils are present.

2. Climate

2.1 Climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km grid point dataset (Met. Office, 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site. In addition, no local climatic factors such as exposure or frost risk are believed to affect the site.

2.4 Climatic factors do, however, interact with soil properties to influence soil wetness and droughtiness limitations. At this locality, the climate is relatively moist, in regional terms, thereby partially offsetting the risk of soil droughtiness.

Table 2 : Climatic Interpolations

Grid Reference	SU772377	SU773373
Altitude (m, AOD)	75	80
Accumulated Temperature (degree days, Jan-June)	1452	1446
Average Annual Rainfall (mm)	805	813
Field Capacity (days)	180	181
Moisture Deficit, Wheat (mm)	101	100
Moisture Deficit, Potatoes (mm)	93	92
Overall Climatic Grade	1	1

3. Relief

3.1 The site lies at an altitude in the range of 75-80 m AOD, falling gently towards from south-east to north-west. Nowhere on the site does gradient or relief affect land quality.

4. Geology and Soil

- 4.1 British Geological Survey (1975), Sheet 300, Alresford shows the majority of the site to be underlain by Lower Cretaceous Folkestone Beds, (ferruginous sands), mapped towards the south of the site. To the north of the site Lower Cretaceous Gault Clay, (marly and sandy clay), is mapped with alluvium found north and west of Kingsley stream.
- 4.2 The published Soil Survey map, (SSEW, 1983, 1:250,000) shows the majority of the site in the north and west to comprise soils of the Denchworth Association. These are described as 'slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils', (SSEW, 1984). The remaining land in the south eastern half of the site comprises soils of the Frilford Association. These are described as 'deep well drained sandy and coarse loamy soils', (SSEW, 1984).
- 4.3 Detailed field examination of the soils on the site found profiles to be extremely variable although in broad terms the north and west of the site comprises heavy clayey soils whilst elsewhere fine loamy and medium textured profiles passing to clayey or sandy subsoils occur.

5. Agricultural Land Classification

- 5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.
- 5.2 The location of the soil observation points are shown on the attached sample point map.

Grade 2

- 5.3 Very good quality land has been mapped where minor soil wetness and/or droughtiness limitations exist.

Profiles typically comprise non-calcareous fine and medium sandy loam or occasionally fine sandy silt loam topsoils which overlie upper subsoils of similar or slightly heavier texture (ie, medium clay loam or sandy clay loam). In the lower subsoils profiles may pass to clay or become lighter (ie, loamy medium sand or medium sandy loam) from about 60 to 120 cm. Profiles are generally stoneless. Where clay is present in the lower subsoil, it impedes drainage causing gleying or slight gleying below about 35-50 cm. Given these drainage characteristics, Wetness Class II is appropriate, and this land is slightly limited, in terms of opportunities for cultivations and grazing and adverse effects on crop growth and development, by soil wetness.

Where profiles have lighter topsoils and subsoils the land may be slightly drought prone due to slightly restricted profile available water.

Subgrade 3a

- 5.4 Land has been assigned to Subgrade 3a, good quality land, on the basis of soil wetness limitations.

Profiles typically comprise non-calcareous medium sandy loam and medium clay loam topsoils, which may be slightly stony (ie, 1-3% total flints by volume). These overlie similar or heavy clay loam upper subsoils, before passing to clay in the lower subsoil at 50-58 cm. These soils are placed in Wetness Class III which equates with Subgrade 3a given the prevailing climate and topsoil texture. Soil wetness may affect crop growth and development and cause restrictions on cultivations and/or grazing.

Subgrade 3b

- 5.5 Moderate quality land, Subgrade 3b, has been mapped where soil wetness is limiting.

Profiles typically comprise non-calcareous medium sandy loam and sandy clay loam topsoils which may be very slightly stony (ie, 1-3% total flints). These overlie heavier clay or sandy clay upper and lower subsoils at 30-45 cm. These subsoils are slowly permeable with angular blocky structures which act to severely impede the drainage. As a result, most of the soils show significant gleying just below the topsoil, and are placed in Wetness Class IV. This Wetness Class equates with Subgrade 3b given the prevailing climate and topsoil texture. As before, soil wetness may affect crop growth and development and cause restrictions on cultivations and/or grazing.

Grade 4

- 5.6 Land classed as poor quality is restricted by severe soil wetness and workability limitations.

Non calcareous, heavy silty clay loam topsoils overlie poorly structured clay subsoils. Typically the subsoils are slowly permeable with angular blocky structures which act to severely impede the drainage through the profile. As a result, most of the soils show significant gleying within the topsoil and are placed in Wetness Class IV. This degree of wetness, together with the heavy nature of the topsoils, limits the land to Grade 4 at the prevailing field capacity days (180-181 days). The severity of the wetness limitation across the northern part of the site acts to greatly restrict the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

ADAS Ref: 1502/283/94
MAFF Ref: EL15/107

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975) Sheet No. 300, Alresford.

MAFF (1988), Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.

Meteorological Office (1989), Agroclimatic datasets for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, 1:250,000 and accompanying legend.

Soil Survey of England and Wales (1984), Bulletin 15, Soils of their use in South-East England.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 : Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 : Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a : Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b : Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 : Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging ¹
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years. ²
II	The soil profile is wet within 70 cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years or, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

¹The number of days specified is not necessarily a continuous period.

²'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

Soil Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

Database Printout - Horizon Level Information

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 100 km grid square and 8 figure grid reference.
2. **USE** : Land use at the time of survey. The following abbreviations are used.

ARA : Arable	WHT : Wheat	BAR : Barley
CER : Cereals	OAT : Oats	MZE : Maize
OSR : Oilseed rape	BEN : Field Beans	BRA : Brassicae
POT : Potatoes	SBT : Sugar Beet	FCD : Fodder Crops
LIN : Linseed	FRT : Soft and Top Fruit	FLW : Fallow
PGR : Permanent Pasture	LEY : Ley Grass	RGR : Rough Grazing
SCR : Scrub	CFW : Coniferous Woodland	DCW : Deciduous Wood
HTH : Heathland	BOG : Bog or Marsh	FLW : Fallow
PLO : Ploughed	SAS : Set aside	OTH : Other
HRT : Horticultural Crops		
3. **GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.
5. **AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
6. **MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)
7. **DRT** : Best grade according to soil droughtiness.
8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL : Microrelief limitation **FLOOD** : Flood risk **EROSN** : Soil erosion risk
EXP : Exposure limitation **FROST** : Frost prone **DIST** : Disturbed land
CHEM : Chemical limitation

9. **LIMIT** : The main limitation to land quality. The following abbreviations are used.

OC : Overall Climate	AE : Aspect	EX : Exposure
FR : Frost Risk	GR : Gradient	MR : Microrelief
FL : Flood Risk	TX : Topsoil Texture	DP : Soil Depth
CH : Chemical	WE : Wetness	WK : Workability
DR : Drought	ER : Erosion Risk	WD : Soil Wetness/Droughtiness
ST : Topsoil Stoniness		

Soil Pits and Auger Borings

1. **TEXTURE** : soil texture classes are denoted by the following abbreviations.

S :	Sand	LS :	Loamy Sand	SL :	Sandy Loam
SZL :	Sandy Silt Loam	CL :	Clay Loam	ZCL :	Silty Clay Loam
ZL :	Silt Loam	SCL :	Sandy Clay Loam	C :	Clay
SC :	Sandy Clay	ZC :	Silty Clay	OL :	Organic Loam
P :	Peat	SP :	Sandy Peat	LP :	Loamy Peat
PL :	Peaty Loam	PS :	Peaty Sand	MZ :	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F :	Fine (more than 66% of the sand less than 0.2mm)
M :	Medium (less than 66% fine sand and less than 33% coarse sand)
C :	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M** : Medium (<27% clay) **H** : Heavy (27-35% clay)

2. **MOTTLE COL** : Mottle colour using Munsell notation.
3. **MOTTLE ABUN** : Mottle abundance, expressed as a percentage of the matrix or surface described.

F : few <2% **C** : common 2-20% **M** : many 20-40% **VM** : very many 40% +

4. **MOTTLE CONT** : Mottle contrast

F : faint - indistinct mottles, evident only on close inspection
D : distinct - mottles are readily seen
P : prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL** : Ped face colour using Munsell notation.
6. **GLEYS** : If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH** : Stone Lithology - One of the following is used.

HR :	all hard rocks and stones	SLST :	soft oolitic or dolimitic limestone
CH :	chalk	FSST :	soft, fine grained sandstone
ZR :	soft, argillaceous, or silty rocks	GH :	gravel with non-porous (hard) stones
MSST :	soft, medium grained sandstone	GS :	gravel with porous (soft) stones
SI :	soft weathered igneous/metamorphic rock		

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT** : the degree of development, size and shape of soil peds are described using the following notation:

degree of development **WK** : weakly developed **MD** : moderately developed
 ST : strongly developed

ped size **F** : fine **M** : medium
 C : coarse **VC** : very coarse

ped shape **S** : single grain **M** : massive
 GR : granular **AB** : angular blocky
 SAB : sub-angular blocky **PR** : prismatic
 PL : platy

9. **CONSIST** : Soil consistence is described using the following notation:

L : loose **VF** : very friable **FR** : friable **FM** : firm **VM** : very firm
EM : extremely firm **EH** : extremely hard

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor
11. **POR** : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.
12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.
13. **SPL** : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.
14. **CALC** : If the soil horizon is calcareous, a 'Y' will appear in this column.
15. Other notations
APW : available water capacity (in mm) adjusted for wheat
APP : available water capacity (in mm) adjusted for potatoes
MBW : moisture balance, wheat
MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 36 Pit Number : 1P

Grid Reference: SU77303740 Average Annual Rainfall : 805 mm
 Accumulated Temperature : 1452 degree days
 Field Capacity Level : 180 days
 Land Use :
 Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 35	MSL	10YR44 00	0	0			MDCSAB	FR	M	
35- 70	SCL	10YR43 00	0	0			MDCSAB	FR	M	
70-120	MSL	10YR54 00	0	0		C	WKMSAB	FR	M	

Wetness Grade : 1 Wetness Class : I
 Gleying : 070 cm
 SPL : No SPL

Drought Grade : 1 APW : 157mm MBW : 56 mm
 APP : 112mm MBP : 19 mm.

FINAL ALC GRADE : 1
 MAIN LIMITATION :

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 36 Pit Number : 2P

Grid Reference: SU77403730 Average Annual Rainfall : 805 mm
 Accumulated Temperature : 1452 degree days
 Field Capacity Level : 180 days
 Land Use :
 Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 35	SCL	10YR43 00	0	0			MDCSAB	FR	M	
35- 45	HCL	10YR42 00	0	0		C	MDCSAB	FM	M	
45- 80	C	10YR62 53	0	0		C	WKCAB	M	P	

Wetness Grade : 3B Wetness Class : IV
 Gleying : 035 cm
 SPL : 045 cm

Drought Grade : 3A APW : 103mm MBW : 2 mm
 APP : 108mm MBP : 15 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU77053780	STB SE	01	0 030	4	4	116	15 105	12	2			WE	4	
1P	SU77303740	HOR S	01	070	1	1	157	56 112	19	1				1	
2	SU77153780	STB SE	01	0 025	4	4	99	-2 102	9	3A			WE	4	
2P	SU77403730	HOR S	01	035 045	4	3B	103	2 108	15	3A			WE	3B	
4	SU77303780	STB S	01	0 028	4	4	101	0 104	11	3A			WE	4	
5	SU77103760	FLW		0 025	4	4	99	-2 102	9	3A			WE	4	
6	SU77203770	STB		0 025	4	4	101	0 106	13	3A			WE	4	
7	SU77303770	STB S	01	029 029	4	4	96	-5 108	15	3A			WE	4	
9	SU77203760	FLW		022 022	4	3B	113	12 104	11	2			WE	3B	
10	SU77303760	FLW		0 027	4	4	100	-1 103	10	3A			WE	4	HEAVY TS
11	SU77503760	HOR NE	04		1	1	154	53 114	21	1				1	
12	SU77103750	PGR		032 045	4	3B	146	45 128	35	1			WE	3B	VERY WET
13	SU77203750	HOR		030	2	2	123	22 107	14	2			WD	2	
14	SU77303750	HOR		050 065	2	2	157	56 130	37	1			WE	2	
15	SU77403750	HOR N	02	068 068	2	3A	127	26 118	25	2			WE	3A	
16	SU77503750	HOR NE	02	052 052	3	3A	118	17 109	16	2			WE	3A	
17	SU77103740	PGR		0 025	4	3B	95	-6 102	9	3A			WE	3B	VERY WET
18	SU77203740	HOR W	01	080	1	1	96	-5 80	-13	3A			DR	3A	SL GLEY 30
19	SU77303740	HOR		035	2	2	123	22 108	15	2			WD	2	
20	SU77403740	HOR NE	02	052 052	3	3A	135	34 113	20	1			WE	3A	
21	SU77103730	HOR W	01	055	1	1	158	57 114	21	1				1	
22	SU77203730	HOR W	01	065	2	2	134	33 111	18	1			WE	2	SL GLEY 65
23	SU77303730	HOR W	01	065	2	2	130	29 111	18	2			WE	2	SL GLEY 65
24	SU77403730	HOR W	01	038 047	4	3B	103	2 108	15	3A			WE	3B	
25	SU77453730	HOR W	01	060 075	2	2	141	40 113	20	1			WE	2	
26	SU77153720	HOR		035 035	4	3B	129	28 106	13	2			WE	3B	
27	SU77203720	HOR		030 030	4	3B	133	32 103	10	1			WE	3B	
28	SU77303720	HOR		035	2	1	176	75 133	40	1				1	
29	SU77403720	HOR		035 070	2	2	000	0 000	0	1			WE	2	
30	SU77353710	HOR		030 030	4	3B	139	38 101	8	2			WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR
1	0-30	hzc1	10YR41 00 75YR46 00 F					Y	0	0	0				
	30-100	zc	10YR71 00 75YR58 00 M					Y	0	0	0		P		Y
1P	0-35	ms1	10YR44 00						0	0	0	MDCSAB	FR	M	
	35-70	sc1	10YR43 00						0	0	0	MDCSAB	FR	M	
	70-120	ms1	10YR54 00 10YR61 00 C				75YR56 00	Y	0	0	0	WKMSAB	FR	M	
2	0-25	hzc1	10YR41 00 10YR58 00 C					Y	0	0	0				
	25-80	zc	10YR61 00 75YR68 00 M					Y	0	0	0		P		Y
2P	0-35	sc1	10YR43 00						0	0	0	MDCSAB	FR	M	
	35-45	hc1	10YR42 00 75YR58 00 C					Y	0	0	0	MDCSAB	FM	M	
	45-80	c	10YR62 53 75YR56 58 C					Y	0	0	0	WKCAB	M	P	Y
4	0-28	hzc1	10YR41 00 10YR58 00 C					Y	0	0	0				
	28-80	zc	10YR71 00 75YR58 68 M					Y	0	0	0		P		Y
5	0-25	hzc1	10YR41 00 10YR58 00 C					Y	0	0	0				
	25-80	zc	10YR71 00 75YR58 00 M					Y	0	0	0		P		Y
6	0-25	hzc1	10YR41 00 10YR58 00 C					Y	0	0	0				
	25-80	c	10YR61 00 75YR68 00 M					Y	0	0	0		P		Y
7	0-29	hzc1	10YR42 00						0	0	0				
	29-70	c	10YR61 00 75YR58 00 M					Y	0	0	0		P		Y
9	0-22	mzc1	10YR52 00						0	0	0				
	22-100	c	10YR62 63 75YR46 56 M					Y	0	0	0		P		Y
10	0-27	hzc1	10YR41 00 10YR58 00 C					Y	0	0	0				
	27-80	zc	10YR71 00 75YR58 68 M					Y	0	0	0		P		Y
11	0-33	ms1	10YR42 00						0	0	CH	1			
	33-45	ms1	10YR43 00						0	0	0			M	
	45-65	mc1	10YR44 00						0	0	0			M	
	65-100	hc1	10YR44 54						0	0	0			M	
	100-120	ms1	10YR63 00						0	0	0			M	
12	0-32	z1	10YR42 00						0	0	0				
	32-45	hzc1	10YR52 00 75YR58 00 C				10YR61 00	Y	0	0	0			M	
	45-70	c	10YR52 00 75YR58 00 C				10YR61 00	Y	0	0	0			P	Y
	70-100	sc1	10YR52 00 75YR58 00 M				10YR61 00	Y	0	0	0			M	Y
13	0-30	fs1	10YR44 00						0	0	0				
	30-60	mc1	10YR63 00 75YR58 00 C					Y	0	0	HR	5		M	
	60-120	lms	10YR42 00 75YR56 58 C					Y	0	0	0			M	
14	0-30	fsz1	10YR44 00						0	0	0				
	30-50	mc1	10YR43 00						0	0	0			M	
	50-65	mc1	10YR63 42 75YR58 56 C					Y	0	0	0			M	
	65-120	c	10YR63 42 75YR58 56 C					Y	0	0	0			P	Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS						
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
15	0-35	mc1	10YR43 00					0	0	CH	2							
	35-68	hc1	10YR44 00					0	0		0		M					
	68-100	c	10YR53 00	75YR56	00	M		Y	0	0	0		P				Y	
16	0-30	ms1	10YR42 00					0	0	CH	2							
	30-45	mc1	10YR44 00					0	0		0		M					
	45-52	hc1	10YR44 00					0	0		0		M					
	52-100	c	10YR52 00	75YR56	00	M		Y	0	0	0		P				Y	
17	0-25	mzc1	10YR41 00	75YR56	00	C		Y	0	0	0							
	25-75	zc	10YR51 00	75YR58	00	M	10YR71	00	Y	0	0	0		P			Y	
18	0-30	ms1	10YR42 00					0	0		0							
	30-80	lms	10YR54 00	75YR56	58	C		S	0	0	0		M					
	80-120	ms	10YR73 00	75YR58	00	C		Y	0	0	0		M					
19	0-35	ms1	10YR44 00					0	0		0							
	35-65	sc1	10YR63 00	75YR56	00	C		Y	0	0	0		M					
	65-120	lms	10YR53 00	75YR56	00	C		Y	0	0	0		M					
20	0-32	mc1	10YR42 00					0	0	CH	1							
	32-45	hc1	10YR44 00					0	0		0		M					
	45-52	c	10YR54 00					0	0		0		M					
	52-120	c	10YR63 64	75YR56	00	M		Y	0	0	0		P				Y	
21	0-32	ms1	10YR43 00					0	0		0							
	32-55	mc1	10YR44 00					0	0		0		M					
	55-75	sc1	10YR42 00	75YR46	00	C	10YR72	00	Y	0	0	0		M				
	75-120	ms1	10YR42 00	75YR46	00	C	10YR72	00	Y	0	0	0		M				
22	0-28	ms1	10YR42 00					0	0		0							
	28-48	sc1	10YR44 00					0	0		0		M					
	48-65	hc1	10YR44 54					0	0	HR	2		M					
	65-120	c	10YR54 00	75YR56	58	C	10YR71	00	S	0	0	0		P			Y	
23	0-32	ms1	10YR42 00					0	0	CH	1							
	32-45	mc1	10YR44 00					0	0		0		M					
	45-65	sc1	10YR44 54					0	0		0		M					
	65-110	sc	10YR54 00	75YR58	00	C		S	0	0	HR	10		P			Y	
24	0-30	ms1	10YR42 00					0	0	CH	1							
	30-38	mc1	10YR54 00					0	0		0		M					
	38-47	hc1	10YR53 00	75YR58	00	C	10YR73	00	Y	0	0	0		M				
	47-80	c	10YR52 00	75YR58	00	M		Y	0	0	0		P				Y	
25	0-32	ms1	10YR42 00					0	0	CH	2							
	32-50	sc1	10YR44 00					0	0		0		M					
	50-60	mc1	10YR54 00					0	0		0		M					
	60-75	hc1	10YR64 00	75YR56	58	C		Y	0	0	0		M					
	75-120	sc	10YR63 00	75YR56	58	C		Y	0	0	HR	2		P			Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
26	0-35	fs1	10YR43 00						0	0	HR	2					
	35-65	c	75YR42 00	75YR58	56	C	75YR46	00	Y	0	0	HR	2	P			Y
	65-120	c	10YR51 00	75YR56	58	C	75YR42	00	Y	0	0	HR	2	P			Y
27	0-30	ms1	10YR43 00						0	0		0					
	30-120	sc	10YR42 62	75YR56	58	C	75YR46	00	Y	0	0		0	P			Y
28	0-35	ms1	10YR44 00						0	0		0					
	35-80	fsz1	10YR42 00	75YR58	00	C			Y	0	0		0	M			
	80-120	mc1	10YR63 00	75YR58	00	C			Y	0	0		0	M			
29	0-35	ms1	10YR44 00						0	0		0					
	35-70	sc1	10YR42 00	75YR56	00	C	10YR62	00	Y	0	0		0	M			
	70-120	sc	10YR42 51	75YR57	58	M	10YR62	00	Y	0	0		0	P			Y
30	0-30	sc1	10YR43 00						0	0	HR	2					
	30-80	c	75YR52 00	75YR56	58	C	10YR62	63	Y	0	0	HR	2	P			Y
	80-120	cs1	75YR52 00	75YR56	58	C			Y	0	0	HR	2	M			Y