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Hampshire Minerals Plan
Omission Site 29 Leigreen Farm,
Downton
Agricultural Land Classification
ALC Map & Report
December 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

HAMPSHIRE MINERALS PLAN

OMISSION SITE 29 LEAGREEN FARM, DOWNTON

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 29 comprises 48.8 hectares of land to the north east of Downton south Hampshire. An Agricultural Land Classification (ALC) survey was carried out on the northern part of the site during December 1994 whilst the land south of the A337 was surveyed in June 1994. Both surveys were undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 53 borings and three 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 surveys the land across both parts of the site was given over to permanent pasture or ley grassland. Areas of non agricultural land have been mapped in association with farm tracks and scrub whilst urban land denotes the A337. Two small areas of mixed deciduous woodland have also been shown.
- 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. This ALC map supersedes any previous survey work for this site.

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	19.1	39.1	40.4
3a	21.7	44.5	45.9
3b	5.5	11.3	<u>11.7</u>
Urban	0.3	0.6	100.0 (47.3 ha)
Non Agricultural	1.7	3.5	
Woodland	<u>0.5</u>	<u>1.0</u>	
Total area of site	48.8	100.0	

- 1 6 Appendix I 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 The land surveyed has been classified as very good quality Grade 2 to moderate quality Subgrade 3b. The grading of the site is primarily influenced by soil wetness and soil droughtiness limitations. Variable soils were encountered on the site and the grade is determined by the severity of the wetness or droughtiness limitation. Soil wetness is overriding where imperfectly drained clayey soils occur whilst droughtiness may be a problem where soils are stony and shallow over gravel.

2 Climate

- 2 1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5km grid point dataset (Met Office 1989) for representative locations in the survey area.

Table 2 Climatic Interpolations

Grid Reference	SZ279940	SZ277932
Altitude (m AOD)	25	15
Accumulated Temperature (day degrees C Jan-June)	1539	1551
Average Annual Rainfall (mm)	813	800
Field Capacity (days)	168	166
Moisture Deficit Wheat (mm)	111	114
Moisture Deficit Potatoes (mm)	107	110
Overall Climatic Grade	1	1

- 2 2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse climatic conditions may restrict land quality irrespective of favourable site and soil conditions. The details in the table above show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk are believed to affect the land quality.
- 2 3 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. At this locality, the climate is relatively warm and moist in regional terms, thereby increasing the likelihood of soil wetness problems whilst reducing the probability of soil droughtiness.

3 Relief

- 3 1 The site lies at an altitude of 15-25 m AOD, falling gently from the north towards the south-west. Most of the site lies on a plateau at the higher altitude, although a

small valley runs along the western site boundary south of the A337. Nowhere on the site do gradient or relief affect land quality.

4 Geology and Soil

- 4.1 British Geological Survey (1975) Sheet 330 Lymington shows the majority of the site to be underlain by plateau gravel with Osborne and Headon Beds mapped along the western fringes of the site.
- 4.2 Soil Survey of England and Wales (1983) Sheet 6 shows the entire site to comprise soils of the Efford 1 association. These are described as well drained fine loamy soils often over gravel associated with similar permeable soils variably affected by groundwater (SSEW 1983).
- 4.3 Variable soils were observed during field survey. In broad terms clay loam soils were found either to overlie slowly permeable horizons of clay which impede drainage and/or sandy lower subsoil horizons. In addition some soils are affected by fluctuating groundwater.

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 Land of this quality has been identified across one fifth of the area surveyed. The land is principally limited by minor soil droughtiness and/or soil wetness restrictions.
- 5.4 Profiles typically comprise non calcareous medium clay loam topsoils which may be very slightly stony (i.e. 1-3% total flints by volume). These overlie similarly textured or slightly heavier (heavy clay loam) upper subsoils containing about 1-10% total flints. Profiles may extend as such to depth but more usually pass to heavier clay horizons or more sandy horizons (sandy clay loam, sandy loam or loamy sand textures) in the lower subsoil before becoming impenetrable (to soil auger) between 75 and 100 cm. Lower subsoils may contain up to 35% total flints before becoming impenetrable over very stony horizons containing 45-60% flints. Soils particularly to the north of the A337 are typically gleyed or slightly gleyed within 40 cm of the surface commonly from the topsoil. Such imperfect drainage is associated with a fluctuating groundwater table rather than slowly permeable clay horizons in most instances and as such profiles are assigned to Wetness Class I or more usually II. The land is thereby restricted by minor soil wetness limitations which commonly act in combination with slight soil droughtiness caused

by the interaction of climatic factors and soils which are slightly stony throughout and very stony and/or sandy at depth

Subgrade 3a

- 5 5 Land has been assigned to Subgrade 3a, good quality on the basis of both soil droughtiness and soil wetness limitations
- 5 6 Profiles are non calcareous throughout and comprise very slightly stony (ie 1-5% total flints by volume) medium clay loam topsoils These overlie similar or heavy clay loam upper subsoils Profiles may either continue as clay loams or pass to clay before becoming impenetrable to a soil auger between 50 and 95 cm depth over gravelly horizons containing 30-50% flints or they may pass to more sandy textures such as sandy loams or loamy sands before becoming impenetrable over gravelly horizon (see 2p) Such profiles may show evidence of imperfect drainage in the form of slight gleying or gleying at variable depths but since such seasonal waterlogging is caused by fluctuating groundwater rather than slowly permeable clay horizons profiles are assigned to Wetness Class I or II The soils described above have limited reserves of profile available water due to their stony and gravelly horizons at relatively shallow depth which results in soil droughtiness restrictions which may affect the consistency and level of yield
- 5 7 A number of profiles particularly to the north of the A337 with similar topsoils and upper subsoils to those described above pass to poorly structured clay in the lower subsoil below about 45-55 cm The slow permeability of this horizon impedes drainage as indicated by shallow gleying from the topsoil such that Wetness Class III is appropriate Profiles may be impenetrable over gravelly horizons (see 3p) This land is affected by soil wetness limitations which may affect the timings of cultivations crop growth and development and may restrict the opportunities for land work and/or grazing

Subgrade 3b

- 5 8 Land assigned to this grade moderate quality land is again mainly affected by soil droughtiness limitations with occasional profiles being limited by soil wetness
- 5 9 Very slightly stony (1-8% total flints) medium clay loam topsoils overlie similar textures or heavy clay loam in the upper subsoil (containing 2-35% flints) Typically profiles become very stony (ie 36-60% flints by volume) below about 40-60 cm and impenetrable from 35-65 cm These profiles have low reserves of available water for plant growth due to their shallow depth over gravelly horizons and total profile stone contents As a result plants may suffer severe drought stress and the level and consistency of yield will be affected
- 5 10 Occasional profiles in the Subgrade 3b mapping units are affected by soil wetness Profiles are similar to those described above but rather than passing to gravelly horizons in the lower subsoil they pass to slowly permeable clay below 40 cm This impedes drainage causing seasonal waterlogging as indicated by gleying from

the topsoil which affects crop growth and development and enhances the risk of soil structural damage through untimely cultivations and poaching by livestock

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Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1975) Sheet No 330 Lymington

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 and 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 29 Pit Number 1P

Grid Reference SZ27809390 Average Annual Rainfall 813 mm
 Accumulated Temperature 1539 degree days
 Field Capacity Level 168 days
 Land Use Ley
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 35	MCL	10YR52 00	0	2	HR	C				
35 56	MCL	10YR54 00	0	2	HR	C	MDCSAB	FR	M	
56 84	HCL	10YR54 00	0	2	HR	M	MDCSAB	FR	M	
84 120	HCL	10YR71 00	0	15	HR	M			M	

Wetness Grade 2 Wetness Class II
 Gleying 0 cm
 SPL No SPL

Drought Grade 2 APW 150mm MBW 39 mm
 APP 117mm MBP 10 mm

FINAL ALC GRADE 2
 MAIN LIMITATION Soil Wetness/Droughtiness

SAMPLE NO	GRID REF	ASPECT USE	- WETNESS -		-WHEAT-		POTS		M REL		EROSN	FROST		CHEM	ALC	COMMENTS	
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	SZ27559430	LEY		028		2	2	080	-31	080	27	3B			DR	3B	I50 POSS 3A
1P	SZ27809390	LEY		0		2	2	150	39	117	10	2			WD	2	
2	SZ27759430	PGR NE	01	0	050	3	3A	110	-1	112	5	3A			WE	3A	IMP 85
3	SZ27509420	PGR		0		2	2	000	0	000	0				WE	2	
4	SZ27609420	LEY		0		2	2	000	0	000	0				WE	2	
5	SZ27709420	PGR		053		1	1	118	7	116	9	2			DR	2	SL GLEY 42
6	SZ27809420	PGR E	01	032	050	3	3A	000	0	000	0				WE	3A	IMP 68
7	SZ27609410	LEY		0		2	2	156	45	118	11	1			WE	2	
8	SZ27709410	PGR		0	050	3	3A	000	0	000	0				WE	3A	
9	SZ27809410	PGR		0		2	2	124	13	117	10	2			WE	2	IMP 90
10	SZ27909410	PGR E	01	035		2	2	086	-25	089	18	3B			DR	3B	I55 POSS 3A
11	SZ27509400	PGR SW	02	0	055	3	3A	106	-5	110	3	3A			WE	3A	IMP 80
12	SZ27609400	PGR W	01	0		2	2	112	1	114	7	3A			WD	2	I80 PROB 2
13	SZ27709400	PGR		0	070	3	3A	115	4	113	6	3A			WE	3A	
14	SZ27809400	PGR		030		2	3A	122	11	114	7	2			WE	3A	
15	SZ27909400	PGR E	01	0	046	3	3A	097	14	108	1	3A			WE	3A	IMP 70
16	SZ27509390	PGR SW	02	0		2	2	058	-53	058	-49	4			DR	3B	I35 PROB 3B
17	SZ27609390	PGR W	01	0		2	2	090	-21	095	-12	3B			DR	3B	I60 POSS 3A
18	SZ27709390	LEY W	01	035		2	2	150	39	115	8	2			WD	2	
19	SZ27809390	LEY E	01	028		2	2	123	12	109	2	2			WE	2	SEE 1P
20	SZ27909390	LEY E	01	039		2	2	128	17	115	8	2			WE	2	IMP 99
21	SZ28009390	LEY E	01	048	048	3	3A	094	-17	103	4	3A			WE	3A	IMP 65
22	SZ27709380	PGR		0		2	2	114	3	116	9	3A			WE	2	I80 PROB 2
23	SZ27809380	PGR		0	075	2	2	000	0	000	0				WE	2	IMP 95
24	SZ27909380	LEY E	01	035		2	2	153	42	116	9	2			WD	2	
25	SZ28009382	LEY E	02	028	028	4	3B	097	-14	097	-10	3A			WE	3B	IMP 80

SAMPLE	DEPTH	TEXTURE	COLOUR	- MOTTLES		-- PED		- STONES----			STRUCT/ CONSIST	SUBS STR POR IMP SPL CALC		
				COL	ABUN	CONT	COL	GLE	2	>6			LITH	TOT
1	0 28	mc1	10YR42 00					0	0	HR	2			
	28-50	hc1	10YR52 00	10YR58 00	C		10YR71 00	Y	0	0	HR	15	M	Imp 50 gravelly
1P	0 35	mc1	10YR52 00	75YR46 00	C			Y	0	0	HR	2		
	35 56	mc1	10YR54 00	75YR58 00	C			S	0	0	HR	2	MDCSAB FR M	
	56 84	hc1	10YR54 00	75YR58 68	M			S	0	0	HR	2	MDCSAB FR M	
	84 120	hc1	10YR71 00	75YR68 00	M			Y	0	0	HR	15	M	C + S lenses
2	0-33	mc1	10YR43 53	10YR58 00	C			Y	0	0	HR	1		
	33-45	mc1	10YR53 52	10YR58 00	C		10YR61 00	Y	0	0	HR	2	M	
	45-50	hc1	10YR52 00	10YR58 00	C		10YR61 00	Y	0	0	HR	2	M	
	50 70	c	10YR71 00	75YR68 00	M			Y	0	0		0	P	Y
	70-85	c	10YR71 00	75YR68 00	M			Y	0	0	HR	5	P	Y
3	0 32	mc1	10YR42 00	75YR46 00	C			Y	0	0		0		
	32 50	mc1	10YR52 00	75YR56 00	C			Y	0	0		0	M	
	50 120	hc1	10YR63 00	75YR58 00	M		10YR61 00	Y	0	0		0	M	
4	0 35	mc1	10YR42 00	75YR46 00	C			Y	0	0		0		
	35-50	hc1	10YR41 00	75YR46 00	C			Y	0	0		0	M	
	50-120	hc1	10YR53 00	75YR68 00	M			Y	0	0		0	M	
5	0-35	mc1	10YR43 00						0	0		0		
	35-42	mc1	10YR44 00						0	0		0	M	
	42-53	hc1	10YR43 00	75YR58 00	C			S	0	0	HR	2	M	
	53 65	sc1	10YR62 00	75YR68 00	M			Y	0	0	HR	2	M	
	65-80	ms1	10YR62 00	75YR68 00	M			Y	0	0	HR	2	M	Imp 80 stones
6	0 32	mc1	10YR43 00						0	0	HR	1		
	32-40	hc1	10YR42 00	75YR58 00	C		10YR61 00	Y	0	0	HR	2	M	
	40-50	c	10YR53 00	75YR58 00	C			Y	0	0	HR	2	M	Border hc1
	50-68	c	10YR62 00	75YR68 00	M			Y	0	0	HR	5	P	Y
7	0 32	mc1	10YR42 00	75YR46 00	C			Y	0	0		0		
	32 55	hc1	10YR43 00						0	0		0	M	
	55 90	hc1	10YR53 00	75YR68 00	C			Y	0	0		0	M	
	90 120	sc1	10YR53 00	75YR68 00	C			Y	0	0	HR	2	M	
8	0 30	mc1	10YR42 00	75YR46 00	C			Y	0	0		0		
	30 38	mc1	10YR42 00	75YR56 00	C		10YR61 00	Y	0	0		0	M	
	38 50	hc1	10YR42 00	75YR56 00	C		10YR61 00	Y	0	0		0	M	
	50 65	c	10YR54 00	75YR58 00	C			S	0	0		0	P	Y
	65 75	c	10YR62 00	75YR68 00	M			Y	0	0		0	P	Y
	75 120	c	10YR62 00	75YR68 00	M			Y	0	0	HR	5	P	Y
9	0 45	mc1	10YR52 41	10YR56 00	C			Y	1	0	HR	3		
	45-85	hc1	10YR53 54	10YR58 00	C			Y	0	0	HR	5	M	
	85-90	sc1	10YR53 54						0	0	HR	10	M	Imp 90 stones

SAMPLE	DEPTH	TEXTURE	COLOUR	- MOTTLES - - PED			- STONES -- STRUCT/ SUBS			IMP	SPL	CALC						
				COL	ABUN	CONT	COL	GLEY	>2				>6	LITH	TOT	CONSIST	STR	POR
10	0 35	mc1	10YR41 42	10YR56 00	F				1	0	HR	3						
	35 55	hc1	10YR53 54	10YR56 58	C				Y	0	0	HR	15		M			Imp 55 stones
11	0-37	mc1	10YR41 42	10YR56 46	C				Y	1	0	HR	3					
	37-55	hc1	10YR53 54	10YR56 00	M				Y	0	0	HR	3		M			
	55-80	c	10YR53 54	10YR56 58	M				Y	0	0	HR	10		P		Y	Imp 80 stones
12	0 35	mc1	10YR41 52	10YR56 00	M				Y	1	0	HR	2					
	35 45	hc1	10YR53 54	10YR56 58	C				Y	0	0	HR	1		M			
	45 80	hc1	10YR53 54	10YR56 58	M				Y	0	0	HR	10		M			Imp 80 stones
13	0 35	mc1	10YR52 41	10YR56 00	C				Y	3	0	HR	5					
	35-50	mc1	10YR53 54	10YR56 58	C				Y	0	0	HR	5		M			
	50 70	hc1	10YR53 54	10YR56 00	C				Y	0	0	HR	5		M			
	70 90	c	10YR53 54	10YR58 00	M				Y	0	0	HR	10		P		Y	
14	0 30	hc1	10YR52 53							1	0	HR	3					
	30-48	hc1	10YR52 53	10YR56 58	C				Y	0	0	HR	2		M			
	48 90	hc1	10YR53 54	10YR56 58	M				Y	0	0	HR	5		M			
15	0 35	mc1	10YR52 42	10YR56 00	C				Y	1	0	HR	2					
	35 46	hc1	10YR53 54	10YR56 58	M				Y	0	0	HR	5		M			
	46-70	c	10YR53 54	10YR56 00	M				Y	0	0	HR	5		P		Y	Imp 70 stones
16	0-35	mc1	10YR41 00	10YR46 56	C				Y	5	0	HR	8					Imp 35 gravelly
17	0-35	mc1	10YR42 00	75YR46 00	C				Y	0	0	HR	5					
	35-49	hc1	10YR42 52	75YR56 00	C				Y	0	0	HR	10		M			
	49 60	hc1	10YR42 00	10YR56 00	C				Y	0	0	HR	20		M			Imp 60 stones
18	0 35	mc1	10YR42 00							0	0	HR	3					
	35 58	hc1	10YR52 00	75YR46 00	C				Y	0	0	HR	3		M			
	58 88	mc1	10YR52 00	10YR56 00	C				Y	0	0	HR	5		M			
	88-100	sc1	10YR53 00	10YR56 00	C				Y	0	0	HR	5		M			
	100 120	hc1	10YR61 00	75YR46 00	C				Y	0	0	HR	10		M			
19	0 28	mc1	10YR42 00							0	0	HR	3					
	28-48	hc1	10YR42 00	75YR46 00	C				Y	0	0	HR	3		M			
	48 65	hc1	10YR54 00	75YR56 00	C				S	0	0	HR	3		M			
	65-80	hc1	10YR53 00	75YR56 00	C				Y	0	0	HR	3		M			
	80-89	mc1	10YR53 00	75YR56 00	C				Y	0	0	HR	3		M			
	89 95	ms1	10YR52 00	75YR56 00	C				Y	0	0	HR	3		M			Imp 95 stones
20	0 30	mc1	10YR42 00							0	0	HR	3					
	30 39	hc1	10YR42 00							0	0	HR	3		M			
	39-58	hc1	10YR53 00	75YR56 00	C				Y	0	0	HR	3		M			
	58 88	hc1	10YR52 00	75YR56 00	C				Y	0	0	HR	3		M			
	88-99	c	10YR52 00	75YR56 00	C				Y	0	0	HR	3		P	Y		Imp 99 stones

SAMPLE	DEPTH	TEXTURE	COLOUR	- MOTTLES -			PED COL	- --STONES-				STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT		2	6	LITH	TOT		STR	POR	IMP	
21	0 35	mc1	10YR42 00					0	0	HR	3					
	35-48	hc1	10YR42 00					0	0	HR	3		M			
	48 65	c	10YR52 00	75YR56 00	C			Y	0	0	HR	3		P	Y	Y
22	0 35	mc1	10YR42 52	10YR56 00	C			Y	1	0	HR	3				
	35-80	hc1	10YR53 54	10YR56 46	C			Y	0	0	HR	2		M		
23	0 30	mc1	10YR42 00	75YR46 00	C			Y	0	0		0				
	30 45	mc1	10YR43 00					Y	0	0		0		M		
	45 60	hc1	10YR43 00					Y	0	0		0		M		
	60 75	hc1	10YR53 00	75YR58 00	C			Y	0	0		0		M		
	75 95	c	10YR52 00	75YR68 00	M			Y	0	0		0		P		Y
24	0 35	mc1	10YR42 00						0	0	HR	3				
	35 48	hc1	10YR42 00	10YR56 00	C			Y	0	0	HR	3		M		
	48 120	hc1	10YR53 00	75YR56 00	C			Y	0	0	HR	3		M		
25	0 28	mc1	10YR42 00						0	0	HR	5				
	28 50	c	10YR52 00	75YR46 00	M			Y	0	0	HR	10		P		Y
	50 80	sc1	10YR52 00	10YR56 00	C			Y	0	0	HR	25		M		