

A1

**TEST VALLEY BOROUGH LOCAL PLAN
Land at Charlton and Knights Enham**

**Agricultural Land Classification
Semi Detailed Survey
ALC Map and Report**

February 1998

**Resource Planning Team
Eastern Region
FRCA Reading**

**RPT Job Number 1512/009/98
FRCA Reference EL 15/1484**

AGRICULTURAL LAND CLASSIFICATION REPORT

TEST VALLEY BOROUGH LOCAL PLAN LAND AT CHARLTON AND KNIGHTS ENHAM HAMPSHIRE

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 200 hectares of land to the north of Andover between Charlton and Enham Alamein. The site was originally surveyed in October 1994 but was re visited during February 1998 in order to increase the level of detail of the survey.

2 The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) on behalf of the Ministry of Agriculture Fisheries and Food (MAFF) in connection with the Test Valley Borough Local Plan. This survey supersedes the previous ALC survey for this land carried out in connection with the Hampshire Structure Plan Review at a reconnaissance scale (FRCA Ref 1512/248/94). Information from this 1994 survey has however been used in the current assessment of land quality. In addition data collected during two detailed surveys of land at the south west of the site (FRCA Refs 1512/123/93 and 1512/100/96) has been incorporated into the present survey.

3 The work was conducted by members of the Resource Planning Team in the Eastern Region of the FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988). A description of the ALC grades and subgrades is given in Appendix I.

4 At the time of survey the agricultural land use was a mixture of permanent grass being grazed by cattle and sheep and arable cultivation (comprising cereals oilseed rape and beans). The areas of the site shown as Other Land consist of woodland and scrub residential dwellings and farmsteads roads a sports field and a cemetery.

SUMMARY

5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:15,000. It is accurate at this scale but any enlargement would be misleading.

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 overleaf.

7 The 1998 survey work comprises a total of 48 borings and 5 soil pits distributed at approximately one boring every 4 hectares of agricultural land. This data is supplemented by information from a further 29 borings and one pit collected during the 1994 reconnaissance survey. Soil profile descriptions from the 1993 and 1996 detailed surveys at the south of the site provide additional data. In total 92 borings and 8 soil pits have been described across this site equating to an average density of one boring every 2 hectares of agricultural land.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	84.7	48.5	42.5
3a	90.1	51.5	45.2
Other Land	24.6		12.3
Total Surveyed Area	174.8	100.0	87.7
Total Site Area	199.4		100.0

8 The land in agricultural use has been classified as Grade 2 very good quality and Subgrade 3a good quality. The land is predominantly limited by soil droughtiness restrictions.

9 Soils on the site are derived from variably flinty silty drift overlying Upper Chalk. Across parts of the site, notably the higher land, the silty drift deposits are deep, giving rise to well drained soils with good reserves of available water. The interaction between these soil properties and the prevailing climate results in land which is only very slightly drought prone. Grade 2 is therefore appropriate. Elsewhere on the site, soils are shallower to the underlying Chalk and/or more flinty, such that moisture reserves are lower. Subgrade 3a is mapped to reflect the fact that the land is potentially more droughty and less versatile.

FACTORS INFLUENCING ALC GRADE

Climate

10 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989).

Table 2 Climatic and altitude data

Factor	Units	Values		
		SU 356 482	SU 366 487	SU 350 486
Grid reference				
Altitude	m AOD	80	90	100
Accumulated Temperature	day C (Jan June)	1451	1439	1428
Average Annual Rainfall	mm	776	778	786
Field Capacity Days	days	171	171	173
Moisture Deficit Wheat	mm	102	101	98
Moisture Deficit Potatoes	mm	92	91	87
Overall climatic grade		Grade 1	Grade 1	Grade 1

12 The 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

13 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

14 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation Other local climatic factors such as exposure and frost risk are not believed to have a significant effect on the site The site is climatically Grade 1

Site

15 The site lies at an altitude of 75 100 metres AOD with an undulating topography characteristic of a chalk landscape The lowest land occurs through the dry valley running NNE from the village of Charlton From here the land rises to the east and west before falling again along the southern and eastern boundaries Slopes on the site fall within the range 1 6 Across all of the site gradient microrelief and flood risk do not affect agricultural land quality

Geology and soils

16 The most detailed published geological information (BGS 1975) shows the entire site to be underlain by Cretaceous Upper Chalk with very localised drift deposits of river and valley gravel occurring in the dry valleys at the west of the site where it is bounded by the A343 and at the far south of the site immediately north of Charlton

17 The most detailed published soils information for this area (SSEW 1983) shows most of the site to comprise soils of the Carstens association these being described as well drained fine silty over clayey often very flinty (SSEW 1984) Soils of the Charity 2 association are shown to coincide with the dry valleys running through the site These are described as well drained flinty fine silty and fine silty over chalk sometimes shallow (SSEW 1984)

18 Upon detailed field examination soils across the site were found to be more consistent with the description for Charity soils They were found to be variably flinty silty drift overlying chalk at shallow depth on the valley sides and deeper on the crests and in the valley bottoms

AGRICULTURAL LAND CLASSIFICATION

19 The details of the classification of the site are shown on the attached ALC map and the are statistics for each grade are given in Table 1

20 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II

Grade 2

21 Very good quality land occurs mainly across the higher parts of the site. The land has very minor soil droughtiness limitations and is sometimes equally limited by topsoil stoniness.

22 The soils within the Grade 2 mapping units were found to comprise moderately deep, variably flinty and generally well drained profiles (wetness class I). Calcareous topsoils of medium silty clay loam texture contain 6-12% total flints (3-7% greater than 2cm). These rest on heavy silty clay loam and (silty) clay subsoils which generally become heavier with depth and contain 10-35% total flints. Occasional profiles pass to chalk in the lower subsoil below about 75cm and when this is the case lower subsoil horizons may contain up to 50% chalk. Soil pits 1 and 4 are representative of Grade 2 profiles (see Appendix II).

23 These soil characteristics combine with the local climatic conditions to give rise to land which has minor soil droughtiness restrictions. The flinty nature of the soils means that the volume of soil moisture available to growing crops is not quite sufficient to meet demand such that plants may suffer slight drought stress. The level and consistency of yields may be adversely affected. Where topsoil stones greater than 2cm in size exceed 5% the land is also limited to Grade 2 due to the effect which these stones will have on precision drilling, seedling establishment and wear and tear to farm machinery.

Subgrade 3a

24 In broad terms, good quality land occurs across the lower lying parts of the site. The land is limited by soil droughtiness.

25 Soils fall into two main variants, all of which are well drained (wetness class I). The majority comprise calcareous medium (silty) clay loam topsoils with 8-15% total flints (3-7% greater than 2cm). These pass to heavier subsoils, typically heavy (silty) clay loam or clay textures containing 10-50% total flints and up to 60% chalk in the lower subsoil. Profiles tend to rest over chalk between 45 and 70cm depth. Soil pits 2, 3 and 5 are characteristic of land assigned to Subgrade 3a (see Appendix II) and they show that plant roots only extend a further 10cm into the chalk, on average.

26 The second soil type within the Subgrade 3a mapping units is less common and comprises topsoils (medium or heavy silty clay loams) directly overlying chalk bedrock which roots to approximately 70-75cm depth. In the case of both soil types, the land is affected by soil droughtiness restrictions. This arises through the interaction of soil factors, especially high stone contents and restricted rooting into the chalk, with the local climate. Moisture balance calculations indicate that soil moisture reserves are unlikely to be adequate in meeting demand in most years. The agronomic effects of this are to restrict the range of crops which can be grown, as well as adversely affecting yield potential.

Michelle Leek
Resource Planning Team
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1975) *Sheet No 283 Andover Drift Edition 1 50 000 scale*
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land* MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of England and Wales (1983) *Soils of England and Wales Sheet 6 Soils of South East England 1 250 000 scale and accompanying legend*
SSEW Harpenden.

Soil Survey of England and Wales (1984) *Soils and their use in South East England*
SSEW Harpenden

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.

APPENDIX II

SOIL DATA

Contents

Sample location map

Soil abbreviations Explanatory Note

Soil boring descriptions (boring and horizon levels)

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 gran **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

SAMPLE NO	GRID REF	ASPECT USE	WETNESS		WHEAT		POTS		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU35804900	CER W	5		1	2	87	15	93	0	3A		DR	3A	
2	SU35704890	CER E	4	50	1	1	86	16	89	4	3A		DR	3A	POSS 2 DR
3	SU35304880	OSR E	2		1	1	90	12	101	8	3A		DR	2	
4	SU35604880	CER E	1		1	1	93	9	102	9	3A		DR	3A	
5	SU35804880	CER W	4		1	2	102	0	95	2	3A		DR	3A	
6	SU35004870	BEN			1	1	114	12	112	14	2		DR	2	
7	SU35504870	OSR N	3		1	2	79	23	79	14	3B		DR	3B	
8	SU35904870	CER			1	1	103	1	110	17	3A		DR	3A	SEE 5P
9	SU36104870	PGR			1	1	94	8	101	8	3A		DR	3A	SEE 5P
10	SU36604870	CER E	2		1	1	82	20	85	8	3A		DR	3A	
11	SU36704870	CER E	1		1	1	90	12	100	7	3A		DR	3A	
12	SU35004850	BEN			1	1	114	12	114	16	2		DR	2	
13	SU35204850	BEN			1	1	85	17	88	10	3A		DR	2	SEE REC SURV
14	SU35604860	CER E	5		1	1	91	11	104	11	3A		DR	3A	PROB 2 DR
15	SU35704855	CER			1	1	53	49	53	40	3B		DR	3A	
16	SU36404860	CER			1	2	103	1	109	16	3A		DR	3A	PROB 2 SEE 1P
17	SU36704860	CER E	1		1	1	96	6	108	15	3A		DR	3A	
18	SU35104850	BEN			1	1	102	0	114	16	3A		DR	2	SEE REC SURV
19	SU35304850	BEN			1	1	106	4	110	12	3A		DR	2	SEE REC SURV
20	SU35504850	CER E	2		1	1	101	1	105	12	3A		DR	3A	
21	SU35704850	CER W	6		1	1	87	15	93	0	3A		DR	3A	
22	SU35904850	CER			1	1	92	10	101	8	3A		DR	3A	
23	SU36104850	PGR				1	112	10	112	19	2		DR	2	
24	SU36504850	CER E	1		1	1	82	20	82	11	3A		DR	3A	
25	SU35404840	CER E	1		1	1	95	7	105	12	3A		DR	3A	
26	SU35604840	CER E	5		1	1	89	13	99	6	3A		DR	3A	
27	SU35804840	CER W	2		1	2	88	14	96	3	3A		DR	3A	
28	SU36004840	CER			1	1	114	12	114	21	2		DR	2	
29	SU36204840	PGR			1	1	122	20	118	25	2		DR	2	
30	SU36404840	PGR SE	1		1	1	93	9	99	6	3A		DR	3A	
31	SU36604840	CER E	2		1	1	96	6	110	17	3A		DR	3A	
32	SU35904830	CER			1	1	101	1	112	19	3A		DR	2	
33	SU36404830	PGR E	1		1	1	106	4	113	20	3A		DR	2	
34	SU35604820	CER S	1		1	1	83	19	83	10	3A		DR	3A	
35	SU35804820	CER E	2		1	1	93	9	103	10	3A		DR	3A	
36	SU36204820	PGR S	1		1	1	90	12	97	4	3A		DR	3A	
37	SU35504810	CER S	1		1	1	81	21	81	12	3B		DR	3A	
38	SU35704810	CER W	3		1	1	83	19	87	6	3A		DR	3A	
39	SU36104810	CER SW	2		1	1	111	9	109	16	2		DR	2	ALSO ST
40	SU35504800	CER W	4		1	1	85	17	89	4	3A		DR	3A	
41	SU35904800	CER NE	2		1	1	118	16	109	16	2		DR	2	ALSO ST
42	SU35604790	CER NW	2		1	1	87	15	93	0	3A		DR	3A	SEE 3P

SAMPLE NO	GRID REF	ASPECT		GRDNT	GLEYS	SPL	WETNESS		WHEAT		POTS		M REL		EROSN EXP	FROST		CHEM LIMIT	ALC	COMMENTS
		USE					CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD		DIST				
43	SU35804790	CER	E	2			1	1	101	1	106	13	3A					DR	3A	
44	SU35504775	CER	W	2			1	1	89	13	95	2	3A					DR	3A	
45	SU35704780	CER					1	1	116	14	114	21	2					DR	2	ALSO ST
46	SU35804770	CER	E	1			1	1	104	2	112	19	3A					DR	2	ALSO ST
47	SU35504760	CER	W	2			1	1	97	5	99	6	3A					DR	3A	
48	SU35704760	CER					1	1	108	6	106	13	2					WD	2	ALSO ST
1P	SU36454854	CER	SE	2			1	1	115	13	99	1	2					DR	2	
2P	SU36274827	PGR	S	2			1	1	83	19	84	9	3A					DR	3A	PIT 80CM
3P	SU35604790	CER	W	2			1	1	95	7	99	6	3A					DR	3A	PIT 75CM
4P	SU35504810	CER					1	1	108	4	94	1	2					DR	2	
5P	SU35904870	PGR	W	1			1	1	97	5	103	10	3A					DR	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/	SUBS			CALC	
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR	POR		IMP
1	0 33	HZCL	10YR3444						5	2	HR	10					
	33 70	CH	10YR81						0	0	HR	2		P			Y
2	0 28	MZCL	10YR44						5	1	HR	10					
	28 50	HZCL	10YR54	10YR56	F	F			0	0	HR	10		M			
	50 55	HZCL	10YR5453	10YR56	C	F		Y	0	0	HR	25		M			IMP FLINTS
3	0 30	MZCL	10YR43						3	1	HR	10					
	30 55	ZC	10YR5654	10YR58	F	F			0	0	HR	10		M			
	55 70	C	10YR46	10YR58	F	F			0	0	HR	25		M			IMP FLINTS
4	0 26	MZCL	10YR44						4	1	HR	10					
	26 55	HZCL	10YR54						0	0	HR	10		M			
	55 65	ZC	10YR58						0	0	HR	20		M			IMP FLINTS
5	0 25	HZCL	10YR44						3	1	HR	10					
	25 45	ZC	10YR46						0	0	HR	10		M			
	45 60	CH	10YR8164						0	0	HR	3		P			Y
6	0 30	MZCL	75YR43						3	0	HR	6					
	30 50	HZCL	75YR44						0	0	HR	10		M			
	50 65	C	10YR46						0	0	HR	15		M			
	65 95	C	75YR46						0	0	HR	20		M			IMP FLINTS
7	0 25	HZCL	10YR4344						5	2	HR	10					
	25 45	HZCL	10YR5456	10YR58	F	F			0	0	HR	10		M			
	45 50	C	10YR56	10YR58	C	F		S	0	0	HR	30		M			IMP FLINTS
8	0 30	MZCL	10YR43						6	0	HR	10					
	30 40	HZCL	75YR46						0	0	HR	10		M			
	40 65	C	75YR46						0	0	HR	10		M			
	65 70	C	10YR64						0	0	CH	50		M			Y
	70 80	CH	10YR81						0	0		0		P			Y
9	0 30	MZCL	10YR43						3	0	HR	6					
	30 50	HZCL	10YR44						0	0	HR	5		M			
	50 60	C	75YR46						0	0	HR	5		M			IMP FLINTS
10	0 28	MZCL	10YR43						4	0	HR	10					
	28 37	MZCL	10YR44						0	0	HR	20		M			
	37 55	C	75YR46						0	0	HR	15		M			IMP FLINTS
11	0 30	MZCL	10YR43						8	0	HR	15					
	30 60	MZCL	10YR44						0	0	HR	25		M			
	60 70	MZCL	10YR5464						0	0	HR	30		M			IMP FLINTS
12	0 33	MZCL	75YR43						3	0	HR	6					
	33 50	HZCL	75YR44						0	0	HR	10		M			
	50 70	C	10YR46						0	0	HR	10		M			
	70 90	C	75YR46						0	0	HR	15		M			IMP FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED		STONES			STRUCT/		SUBS			IMP	SPL	CALC
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR	POR				
13	0 30	MZCL	75YR43						3	0	HR	6							
	30 55	HZCL	75YR44						0	0	HR	20		M				IMP FLINTS	
14	0 25	MZCL	10YR4243						5	3	HR	10							
	25 50	C	10YR58						0	0	HR	15		M					
	50 65	C	10YR58	75YR58	F	F			0	0	HR	15		M					
	65 70	C	10YR58	75YR58	C	F		S	0	0	HR	25		M				IMP FLINTS	
15	0 28	MZCL	10YR42						7	2	HR	15							
	28 35	MZCL	10YR54						0	0	HR	40		M				IMP FLINTS	
16	0 30	HZCL	10YR43						3	0	HR	6							
	30 45	C	75YR46						0	0	HR	10		M					
	45 80	C	75YR46						0	0	HR	10		M		Y		IMP FLINTS	
17	0 28	MZCL	10YR43						6	0	HR	12							
	28 65	MZCL	10YR44						0	0	HR	15		M					
	65 70	HZCL	10YR54						0	0	HR	20		M				IMP FLINTS	
18	0 33	MZCL	75YR43						3	0	HR	6							
	33 58	HZCL	75YR44						0	0	HR	10		M					
	58 72	C	10YR46						0	0	HR	15		M				IMP FLINTS	
19	0 32	MZCL	75YR43						3	1	HR	6							
	32 70	HZCL	75YR44						0	0	HR	20		M					
	70 85	C	75YR46						0	0	HR	35		M				IMP FLINTS	
20	0 22	MZCL	10YR43						5	2	HR	10							
	22 35	HZCL	10YR5456	10YR52	F	D			0	0	HR	10		M					
	35 65	C	75YR56						0	0	HR	15		M					
	65 85	C	10YR58						0	0	HR	25		M				IMP FLINTS	
21	0 22	MZCL	10YR43						3	0	HR	10						Y	
	22 40	HZCL	10YR54						0	0	HR	10		M				Y	
	40 70	CH	10YR8154						0	0	HR	5		P				Y	
22	0 30	MZCL	10YR43						6	0	HR	12							
	30 45	C	75YR46						0	0	HR	15		M					
	45 50	C	75YR46						0	0	CH	20		M				Y	
	50 60	C	10YR64						0	0	CH	50		M				Y	
	60 70	CH	10YR81						0	0		0		P				Y	
23	0 28	MZCL	10YR43						4	0	HR	8							
	28 40	MZCL	10YR44						0	0	HR	10		M					
	40 55	HZCL	10YR4454						0	0	HR	10		M					
	55 65	HZCL	10YR64						0	0	CH	30		M				Y	
	65 75	HZCL	10YR64						0	0	CH	50		M				Y	
	75 85	CH	10YR81						0	0		0		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
24	0 30	MZCL	10YR43							3	0	HR	8					
	30 40	MZCL	10YR4454							0	0	HR	15					M
	40 50	HZCL	75YR46							0	0	HR	15					M
25	0 22	MZCL	10YR43							5	2	HR	10					
	22 42	HZCL	10YR5456							0	0	HR	10					M
	42 65	C	10YR58							0	0	HR	20					M
	65 75	C	10YR58							0	0	HR	25					M
26	0 24	MZCL	10YR4243							5	2	HR	12					
	24 45	HZCL	10YR54	10YR56		C	F			S	0	0	HR	10				M
	45 65	C	10YR56	10YR58		C	F			S	0	0	HR	20				M
27	0 22	HZCL	10YR43							4	0	HR	8					
	22 35	HZCL	10YR4454							0	0	HR	5					M
	35 70	MZCL	10YR5481							0	0	CH	60					P
28	0 32	MZCL	10YR43							3	0	HR	6					
	32 70	C	75YR46							0	0	HR	7					M
	70 90	C	75YR46	05YR46		C				S	0	0	HR	10				M
29	0 28	MZCL	10YR43							3	0	HR	5					
	28 40	MZCL	10YR44							0	0	HR	5					M
	40 60	HZCL	75YR4446							0	0	HR	5					M
	60 75	C	75YR46							0	0	HR	2					M
	75 85	C	75YR46	05YR46		C				S	0	0	HR	5				M
	85 90	C	75YR46	05YR46		C				S	0	0	CH	50				M
30	0 22	MZCL	10YR43							6	0	HR	12					
	22 35	HZCL	10YR44							0	0	HR	15					M
	35 80	C	75YR46	75YR58		C				S	0	0	HR	25				M
31	0 30	MZCL	10YR43							3	0	HR	8					
	30 45	HZCL	75YR46							0	0	HR	10					M
	45 70	C	75YR46							0	0	HR	15					M
32	0 30	MZCL	10YR43							3	0	HR	7					
	30 40	HZCL	75YR46							0	0	HR	10					M
	40 75	C	75YR46							0	0	HR	10					M
33	0 25	MZCL	10YR43							3	0	HR	6					
	25 50	HZCL	10YR44							0	0	HR	5					M
	50 80	C	75YR46	75YR58		C				S	0	0	HR	15				M
34	0 30	MZCL	10YR43							4	0	HR	8					
	30 50	MZCL	10YR44							0	0	HR	10					M

IMP FLINTS

IMP FLINTS

IMP FLINTS

IMP CHALK

IMP FLINTS

Y

Y

IMP FLINTS

IMP FLINTS

IMP FLINTS

IMP FLINTS

IMP FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED	STONES			STRUCT/	SUBS			SPL	CALC
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR		
35	0 25	MZCL	10YR4344					3	1	HR	10					
	25 60	C	10YR4656	10YR58	F	F		0	0	HR	10		M			
	60 70	CH	10YR8164					0	0	HR	5		P			Y
36	0 25	MZCL	10YR43					3	0	HR	8					
	25 50	HZCL	10YR4454					0	0	HR	10		M			
	50 60	C	75YR46					0	0	HR	10		M			IMP FLINTS
37	0 30	MZCL	10YR43					3	0	HR	10					
	30 50	HZCL	75YR46					0	0	HR	15		M			IMP FLINTS
38	0 30	MZCL	10YR43					4	0	HR	8					Y
	30 65	CH	10YR81					0	0		0		P			Y
39	0 30	MZCL	10YR4243					7	2	HR	10					
	30 65	HZCL	10YR44					0	0	HR	15		M			
	65 90	ZC	75YR44					0	0	HR	15		M			IMP FLINTS
40	0 30	MZCL	10YR43					3	0	HR	5					Y
	30 65	CH	10YR81					0	0		0		P			Y
41	0 27	MZCL	10YR43					7	3	HR	11					
	27 72	HZCL	10YR44					0	0	HR	15		M			
	72 100	ZC	10YR4446					0	0	HR	15		M			IMP FLINTS
42	0 25	MZCL	10YR43					7	2	HR	12					
	25 32	HZCL	10YR44					0	0	HR	10		M			
	32 40	MZCL	10YR44					0	0	CH	60		M			Y
	40 70	CH	10YR81					0	0		0		P			Y
43	0 28	MZCL	10YR4243					6	2	HR	8					
	28 70	ZC	10YR4446					0	0	HR	10		M			
	70 80	CH	10YR81					0	0		0		P			Y
44	0 25	MZCL	10YR43					6	2	HR	10					Y
	25 33	HZCL	10YR44					0	0	HR	5		M			Y
	33 40	MZCL	10YR44					0	0	CH	50		M			Y
	40 70	CH	10YR81					0	0		0		P			Y
45	0 27	MZCL	10YR43					7	3	HR	12					Y
	27 70	HZCL	10YR44					0	0	HR	5		M			
	70 80	MZCL	10YR44					0	0	CH	50		M			Y
	80 90	CH	10YR81					0	0		0		P			Y
46	0 25	MZCL	10YR4243					7	2	HR	11					
	25 75	HZCL	10YR44					0	0	HR	10		M			
	75 76	ZC	75YR4644					0	0	HR	15		M			IMP FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES		PED		STONES			STRUCT/	SUBS		SPL	CALC	
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST			STR
47	0 30	MZCL	10YR43							3	0	HR	6			Y
	30 45	HZCL	10YR44							0	0	CH	50		M	Y
	45 75	CH	10YR81							0	0		0		P	Y
48	0 28	MZCL	10YR43							6	3	HR	10			
	28 40	HZCL	10YR44							0	0	HR	10		M	
	40 64	ZC	10YR4446							0	0	HR	10		M	
	64 90	ZC	10YR44	75YR46	M			S		0	0	HR	5		M	IMP FLINTS
1P	0 18	MZCL	75YR43							4	1	HR	7			
	18 47	HZCL	75YR44							0	0	HR	15	MDCSAB	FR M	
	47 120	C	75YR46							0	0	HR	35	WKCSAB	FM M	
2P	0 22	MCL	10YR43							7	2	HR	15			
	22 49	HCL	75YR44							0	7	HR	22		FM M	
	49 68	C	75YR46							0	0	HR	47		FM P	
	68 78	CH	10YR81							0	0	HR	5		P	Y ROOTS TO 78
3P	0 25	MZCL	10YR43							3	0	HR	8			Y
	25 47	HZCL	10YR44							0	0	HR	10	MDCSAB	FR M	Y S% CHALK
	47 72	CH	10YR81							0	0	HR	5		P	Y ROOTS TO 72
4P	0 25	MZCL	10YR43							4	1	HR	8			
	25 40	MZCL	10YR4344							7	0	HR	10	MDCSAB	FR M	
	40 54	MZCL	10YR54							25	12	HR	35		FR M	
	54 70	MZCL	10YR54							0	0	HR	62		M	PIT TO 70
	70 120	MZCL	10YR54							0	0	HR	62		M	
5P	0 25	MZCL	10YR43							6	2	HR	10			
	25 44	HZCL	10YR44							12	6	HR	18	MDCSAB	FR M	
	44 67	ZC	10YR46	10YR58	C F		10YR56	S		7	3	HR	12	MDCSAB	FM M	
	67 77	CH	10YR8164							0	0	HR	3		FM P	ROOTS TO 77