

**A1
Aylesbury Vale District Local Plan
Site B, Haddenham**

**Agricultural Land Classification
ALC Map and Report
February 1996
(Revised December 1997)**

**Resource Planning Team
Guildford Statutory Group
ADAS Reading**

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AGRICULTURAL LAND CLASSIFICATION REPORT

AYLESBURY VALE DISTRICT LOCAL PLAN SITE B, HADDENHAM

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 49 hectares of land on the northern side of Haddenham. The site is bounded by the A418 in the north, Churchway in the east and the airfield in the west. The original survey was carried out in February 1996.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Aylesbury Vale District Local Plan. The results of the 1996 survey are now superseded. Account has been taken of findings at an adjacent site to the west. As a result of additional survey work on this adjoining site, Haddenham A, in October 1997, the survey results for Haddenham B have been re-assessed and the grading revised.
3. The work was co-ordinated by the Resource Planning Team in the Guildford Statutory Group of ADAS and carried out by members of the Taunton Statutory Group. 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 area was under winter cereals in the west and oilseed rape in the east. The small field in the north east was in set aside. Part of the airfield track passes through the western field and is mapped as 'other land'.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. 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.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% agricultural area	% total site area
2	10.0	20.3	20.2
3a	35.2	71.5	71.1
3b	4.0	8.2	8.1
Other land	0.3	-	0.6
Total agricultural area	49.2	100.0	-
Total site area	49.5	-	100.0

7. The fieldwork was conducted at an average density of one auger boring per hectare. A total of 49 borings and 2 soil inspection pits were described.

8. The western-most part of the site has been mapped as Grade 2, very good quality agricultural land. Clay topsoils overlie clay subsoils which are generally well drained. The topsoils are slightly stony and the subsoils are moderately stony with occasional very stony layers, due to the presence of weathered limestone bedrock. The stone content of the soils restricts the water available to crops and a minor droughtiness limitation exists. This land also experiences a minor workability limitation imposed by the calcareous clay topsoils.

9. Subgrade 3a, good quality agricultural land, represents the majority of the site and comprises two types of soil. Some soils experience restricted drainage as a result of clayey subsoils. This moderate wetness limitation restricts the land to Subgrade 3a. Also within this unit are more stony soils where the limestone substrate is encountered at moderate depths in the profile. These soils have restricted reserves of available water such that a droughtiness limitation exists.

10. A small area of Subgrade 3b land has been mapped in the north of the site. Here a moderate droughtiness limitation exists. The limestone in this area is less weathered and at relatively shallow depth. The slightly stony calcareous clay topsoil overlies very stony and extremely stony clay subsoils. The soils are well drained but have significantly reduced available moisture reserves and are thereby droughty. The land also experiences a minor workability limitation a result of heavy topsoil textures.

Factors Influencing ALC Grade

Climate

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

12. 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	
Grid reference	N/A	SP 741 097	SP 737 098
Altitude	m, AOD	85	87
Accumulated Temperature	day°C	1410	1407
Average Annual Rainfall	mm	628	631
Field Capacity Days	days	132	132
Moisture Deficit, Wheat	mm	108	107
Moisture Deficit, Potatoes	mm	100	99

13. 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.

14. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

15. 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 also believed not to affect the site. The site is climatically Grade 1.

Site

16. The agricultural land at this site lies at an altitude of 85 m AOD. The site is flat and nowhere does gradient or microrelief affect the land quality.

Geology and soils

17. The published geological information for the site (GSGB, 1863) shows it to be underlain by Portland Stone with a small area of Lower Greensand to the east of the site.

18. The published soils information for the site (SSEW,1983) shows the site to comprise soils of the Moreton Association. These soils are described as, 'well drained calcareous clayey and fine loamy soils over limestone, in places shallow and brashy. There may be some deeper slowly permeable calcareous clayey soils' (SSEW, 1983). Soils of this broad type were found across the site.

Agricultural Land Classification

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of 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. Land of very good quality has been mapped in the west of the site. The principal limitations are soil droughtiness and workability.

22. These calcareous soils are well drained and are assessed as Wetness Class I. Clay topsoils overlie clay subsoils. The combination of these heavy topsoil textures and the prevailing climate for the area imposes a minor workability limitation on the land which has the effect of restricting the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. This limits the land to Grade 2. These soils also experience a minor droughtiness limitation due to the stony nature of the profiles. The topsoils are slightly stony and the subsoils are moderately stony. There are

occasionally stonier horizons. Account has been taken of soil profile pits dug on the adjacent site to the west on similar soils. Topsoil stone contents were estimated to be up to 15% total limestone fragments. Pits at both sites (pits 1 and 2, Site B; pits 1, 21 and 22, Site A) showed that subsoil stone contents rise to 35% total limestone with occasional stonier layers as high as 60%. Many profiles were impenetrable to the soil auger below 80cm depth. The stone content in combination with the soil texture and the local climatic regime restricts the water available to crops and a minor droughtiness limitation exists.

Subgrade 3a

23. Land of good quality has been mapped across much of the site. Two soil types comprise this unit with limitations of droughtiness and wetness.

24. Much of the land in this Subgrade occurs where soils rest on weathered limestone at moderate depth, such that a soil droughtiness limitation determines land quality. Soils are calcareous throughout and comprise heavy clay loam or, more usually, clay topsoils, which overlie similar subsoils. Stone contents were estimated to be in the range 10-15% limestone for topsoils, and 10-35% limestone in the subsoil. Profiles were typically impenetrable to the soil auger between depths of 50 and 80cm. A number of soil pits were dug to assess subsoil conditions (see pit 2, Site B; pits 14, 16 and 19, Site A). Weathered limestone was found to occur at depths between 50 and 85cm. The nature of the limestone is variable within each pit and across the site, such that bands of hard, brashy material containing about 35-60% limestone, alternate with highly weathered material which although not very stony (up to 10-30% limestone), is dense and restricts rooting. These soil characteristics result in the amount of soil moisture which is available being reduced. Moisture balance calculations indicate that given the prevailing climatic conditions, such land cannot be graded higher than Subgrade 3a. Soil droughtiness such as this will cause plants to suffer drought stress, especially during drier periods and the level and consistency of crop yields may be affected.

25. Of lesser importance on this site is land limited to Subgrade 3a by soil wetness. Calcareous clay profiles were described which had restricted drainage imposed by slowly permeable subsoils. These soils were gleyed above 40cm and had slowly permeable subsoils such that they were assessed as Wetness Class II or III (see pit 2). The combination of imperfect drainage and the clay topsoil restricts the versatility of the land by increasing the risk of structural damage to soil by poorly timed access and by affecting seed germination and plant development. This land is limited to Subgrade 3a by soil wetness.

Subgrade 3b

26. A small area of moderate quality land has been mapped in the north of the site. This land experiences a moderate droughtiness limitation. Soils are stony and rest on limestone which is less weathered than elsewhere on the site, at shallow depth. The slightly calcareous clay topsoil stone content was measured as 15% hard limestone rising to 65% in the upper subsoil and 85% by 45cm in a soil profile pit, pit 1. Roots were observed to extend to about 60cm. The high stone content, in combination with shallow soil depth and restricted rooting, restricts the water available to growing crops, thereby imposing a moderate droughtiness limitation.

SOURCES OF REFERENCE

Geological Survey of Great Britain (1863) *Sheet 45 SE, Old Series*, Solid.
GSBS: 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) *Sheet 6, Soils of South-East England*, 1:250,000.
SSEW: Harpenden.

Soil Survey of England and Wales (1983) *Soils and their Use in South East England*.
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS 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 (e.g. 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 Pit Descriptions

Soil boring descriptions (boring and horizon levels)

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 grass	LEY:	Ley grass	RGR:	Rough grazing
SCR:	Scrub	CFW:	Coniferous woodland	OTH:	Other
DCW:	Deciduous woodland	BOG:	Bog or marsh	SAS:	Set-Aside
HTH:	Heathland	HRT:	Horticultural crops	PLO:	Ploughed

3. **GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYS/SPL:** 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	ST:	Topsoil Stoniness
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

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 ZR: soft, argillaceous, or silty rocks MSST: soft, medium grained sandstone SI: soft weathered igneous/metamorphic rock	FSST: soft, fine grained sandstone CH: chalk GS: gravel with porous (soft) stones GH: gravel with non-porous (hard) stones
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Stone contents (>2cm, >6cm and total) are given in percentages (by volume).
8. **STRUCT:** the degree of development, size and shape of soil pedes 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	
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	FM: firm	EH: extremely hard
VF: very friable	VM: very firm	
FR: friable	EM: extremely firm	
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	SP74101010	SAS	070	070	2	3A	113	5	115	15	2		WE	3A	
1P	SP73700990	CER			1	2	61	-47	62	-38	3B		DR	3B	DUG TO 60
2	SP73901000	OSR			1	2	92	-16	108	8	3A		DR	3A	IMP 70 SEE 2P
2P	SP74200960	OSR	060	070	2	3A	101	-7	94	-6	3A		WD	3A	DUG TO 95
3	SP74001000	SAS			1	2	94	-14	105	5	3A		DR	3A	IMP 65 SEE 2P
4	SP74101000	OSR	030	030	3	3A	105	-3	103	3	3A		WD	3A	
5	SP73600990	CER			1	2	60	-48	60	-40	3B		DR	3B	IMP 50 SEE 1P
6	SP73700990	CER			1	2	60	-48	60	-40	3B		DR	3B	IMP 50 SEE 1P
7	SP73800990	CER			1	2	93	-15	99	-1	3A		DR	3A	SEE 2P
8	SP73900990	OSR			1	2	92	-16	97	-3	3A		DR	3A	SEE 2P
9	SP74000990	OSR			1	2	87	-21	94	-6	3B		DR	3A	IMP 60 SEE 2P
10	SP74100990	OSR			1	2	115	7	115	15	2		WK	2	
11	SP74200990	OSR	025	025	3	3A	86	-22	95	-5	3B		WD	3A	IMP 75 SEE 2P
12	SP73500980	CER			1	2	48	-60	48	-52	4		DR	3B	IMP 35 SEE 1P
13	SP73600980	CER			1	2	98	-10	111	11	3A		DR	3A	IMP 70 SEE 2P
14	SP73700980	CER			1	2	95	-13	106	6	3A		DR	3A	IMP 70 SEE 2P
15	SP73800980	CER			1	2	60	-48	60	-40	3B		DR	3B	IMP 50 SEE 1P
16	SP73900980	OSR	065	065	2	3A	113	5	114	14	2		WE	3A	
17	SP74000980	OSR	030	030	3	3A	105	-3	103	3	3A		WE	3A	
18	SP74100980	OSR	S60	060	2	3A	91	-17	104	4	3A		WD	3A	IMP 70 SEE 2P
19	SP74200980	OSR			1	2	88	-20	99	-1	3A		DR	3A	IMP 75 SEE 2P
20	SP73400970	CER			1	2	92	-16	98	-2	3A		WD	2	IMP 80 SEE 2P
21	SP73500970	CER			1	2	99	-9	98	-2	3A		WD	2	
22	SP73600970	CER	050	050	2	3A	100	-8	98	-2	3A		WE	3A	
23	SP73700970	CER			1	2	81	-27	79	-21	3B		DR	3B	
24	SP73800970	CER			1	2	98	-10	114	14	3A		DR	3A	IMP 70 SEE 2P
25	SP73900970	CER			1	2	115	7	115	15	2		WD	2	
26	SP74000970	OSR	045	045	3	3A	110	2	108	8	3A		WE	3A	
27	SP74100970	OSR			1	2	108	0	118	18	3A		WD	2	IMP 80 SEE 2P
28	SP74200970	OSR			1	2	88	-20	99	-1	3A		DR	3A	IMP 75 SEE 2P
29	SP73500960	CER			1	2	83	-25	92	-8	3B		DR	3A	IMP 70 SEE 2P
30	SP73600960	CER			1	2	101	-7	101	1	3A		WD	2	
31	SP73700960	CER			1	2	58	-50	58	-42	3B		DR	3B	IMP 40CM X 3
32	SP73800960	CER			1	2	94	-14	101	1	3A		DR	3A	IMP 80 SEE 2P
33	SP73900960	CER			1	2	94	-14	101	1	3A		DR	3A	
34	SP74000960	CER			1	2	91	-17	90	-10	3A		DR	3A	
35	SP74100960	OSR	030	030	3	3A	105	-3	103	3	3A		WE	3A	
36	SP74200960	OSR			1	2	84	-24	95	-5	3B		DR	3A	IMP 70 SEE 2P
37	SP74300960	OSR			1	2	75	-33	80	-20	3B		DR	3A	IMP 60
38	SP73700950	CER	030	030	3	3A	77	-31	87	-13	3B		WE	3A	IMP 70
39	SP73800950	CER			1	2	106	-2	105	5	3A		WD	2	
40	SP73900950	CER			1	2	79	-29	85	-15	3B		DR	3A	IMP 60 SEE 2P

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						DRT
41	SP74000950	CER			1	2	75	-33	81	-19	3B			DR	3A	IMP 60 SEE 2P
42	SP74100950	CER			1	2	63	-45	63	-37	3B			DR	3B	IMP 45 SEE 1P
43	SP74200950	OSR			1	2	72	-36	77	-23	3B			DR	3A	IMP 60
44	SP73800940	CER			1	2	93	-15	101	1	3A			DR	3A	IMP 80
45	SP73900940	CER			1	2	94	-14	101	1	3A			WD	2	
46	SP74000940	CER			1	2	94	-14	101	1	3A			DR	3A	IMP 80 SEE 2P
47	SP74100940	CER			1	2	85	-23	98	-2	3B			DR	3A	IMP 70 SEE 2P
48	SP73900930	CER	050	050	2	3A	90	-18	93	-7	3A			WE	3A	
49	SP74000930	CER			1	2	92	-16	98	-2	3A			DR	3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-30	c	10YR53 00					0	0	0							Y
	30-70	c	10YR56 00					0	0	0		M					Y
	70-90	c	10YR66 62	10YR58 00	M			Y	0	0	0		P	Y		Y	Y
1P	0-30	c	10YR53 00					1	0	HR	15						Y
	30-45	c	10YR56 00					0	0	SLST	65	WKCSAB	FR	M			Y
	45-60	slst						0	0	0			M			Y	IMP, SLST
2	0-30	c	10YR54 00					0	0	HR	15						Y
	30-70	c	25 Y66 64					0	0	0			M			Y	IMP, SLST
2P	0-30	c	10YR44 00					1	0	HR	12						Y
	30-60	c	25 Y56 00					0	0	SLST	60	WKMSAB	FR	G			Y
	60-70	c	25 Y64 00	10YR58 00	C			Y	0	0	SLST	27	WKMSAB	FR	G		Y
	70-95	c	25 Y64 00	10YR58 00	C			Y	0	0	SLST	27	WKCSAB	FM	P	Y	Y
3	0-30	c	10YR54 00					0	0	0							Y
	30-60	c	10YR56 00					0	0	0			M				Y
	60-65	c	10YR66 00					0	0	SLST	30		M			Y	IMP, SLST
4	0-30	c	10YR54 00					0	0	0							Y
	30-90	c	10YR53 52	10YR58 00	C			Y	0	0	0			P		Y	Y
5	0-30	c	10YR54 00					0	0	HR	15						Y
	30-50	c	10YR54 00					0	0	SLST	65		M			Y	IMP, SLST
6	0-30	c	10YR54 00					5	0	HR	15						Y
	30-50	c	10YR66 00					0	0	SLST	65		M			Y	IMP, SLST
7	0-30	c	10YR54 00					0	0	HR	15						Y
	30-50	c	10YR54 00					0	0	SLST	15		M			Y	
	50-80	c	10YR66 00					0	0	SLST	20		M			Y	IMP, SLST
8	0-30	c	10YR54 00					0	0	HR	15						Y
	30-50	c	10YR54 00					0	0	SLST	15		M			Y	
	50-80	c	10YR66 00					0	0	SLST	30		M			Y	IMP, SLST
9	0-30	c	10YR54 00					0	0	0							Y
	30-55	c	10YR54 00	00M00 00	C			0	0	HR	10		M				Y
	55-60	c	10YR66 00					0	0	SLST	20		M			Y	IMP, SLST
10	0-30	c	10YR54 00					0	0	0							Y
	30-60	c	10YR54 00	10YR56 00	F			0	0	0			M				Y
	60-90	c	10YR56 00	10YR58 00	F			0	0	0			M				Y
11	0-25	c	10YR54 00					0	0	HR	15						Y
	25-65	c	10YR53 62	10YR58 00	M			Y	0	0	0			P		Y	Y
	65-75	c	10YR56 00	10YR58 00	M			S	0	0	HR	5		P		Y	Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		IMP
12	0-30	c	10YR53 00						0	0	HR	15				Y	
	30-35	c	10YR54 00						0	0	SLST	65	M			Y	IMP, SLST
13	0-30	c	10YR43 00						0	0		0				Y	
	30-60	c	10YR54 66	10YR64	00	F			0	0		0	M			Y	
	60-70	c	10YR66 00						0	0	SLST	30	M			Y	IMP, SLST
14	0-30	c	10YR54 00						0	0		0				Y	
	30-50	c	10YR54 00						0	0		0	M			Y	
	50-70	c	10YR54 00	10YR56	00	F	00MN00	00	0	0	HR	30	M			Y	IMP, SLST
15	0-30	c	10YR43 00						0	0	HR	15				Y	
	30-50	c	10YR44 00						0	0	SLST	65	M			Y	IMP, SLST
16	0-30	c	10YR53 00						0	0		0				Y	
	30-65	c	10YR56 00						0	0		0	M			Y	
	65-90	c	10YR53 56	10YR58	00	C	00MN00	00	Y	0	0	0	P		Y	Y	
17	0-30	c	10YR53 00						0	0		0				Y	
	30-90	c	10YR72 00	10YR56	00	C			Y	0	0	0	P		Y	Y	
18	0-30	c	10YR54 00						0	0		0				Y	
	30-60	c	10YR54 00	10YR56	00	F			0	0	HR	15	M			Y	
	60-70	c	10YR54 00	00MN00	00	C			S	0	0	HR	30	M		Y	IMP, SLST
19	0-30	c	10YR54 00						0	0	HR	15				Y	
	30-70	c	10YR54 00	10YR52	00	F			0	0	HR	15	M			Y	
	70-75	c	10YR31 00						0	0	HR	30	M			Y	IMP, SLST
20	0-30	c	10YR53 00						1	0	HR	15				Y	
	30-45	c	10YR54 00						0	0	SLST	15	M			Y	
	45-80	c	10YR54 83						0	0	SLST	25	M			Y	IMP, SLST
21	0-30	c	10YR53 00						0	0	HR	15				Y	
	30-50	c	10YR54 00						0	0	SLST	15	M			Y	
	50-90	c	10YR66 00	10YR56	00	F			0	0	SLST	25	M			Y	IMP, SLST
22	0-30	c	10YR43 00						0	0	HR	15				Y	
	30-50	c	10YR54 00						0	0	SLST	15	M			Y	
	50-90	c	10YR66 62	10YR58	00	C			Y	0	0	0	P		Y	Y	
23	0-30	c	10YR43 00						0	0	HR	15				Y	
	30-90	c	10YR66 00	10YR56	00	F			0	0	SLST	60	M			Y	IMP, SLST
24	0-30	c	10YR53 00						0	0		0				Y	
	30-45	c	10YR54 00						0	0		0	M			Y	
	45-60	c	10YR54 00	10YR56	00	F	00MN00	00	0	0		0	M			Y	
	60-70	c	10YR56 00						0	0	HR	10	M			Y	IMP, SLST

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR		POR
25	0-30	c	10YR54 00					0	0	0					Y	
	30-90	c	10YR54 73					0	0	0		M			Y	IMP, SLST
26	0-30	c	10YR53 00					0	0	0					Y	
	30-45	c	10YR54 00					0	0	0		M			Y	
	45-70	c	10YR53 56	10YR58 00 C				Y	0	0	0		P		Y	Y
	70-90	c	10YR63 00	10YR58 00 C				Y	0	0	0		P		Y	Y
27	0-30	hc1	10YR54 00					0	0	0					Y	
	30-60	c	10YR54 00					0	0	0		M			Y	
	60-70	c	10YR56 00					0	0	0		M			Y	
	70-80	c	10YR56 00					0	0	SLST 40		M			Y	IMP, SLST
28	0-30	c	10YR54 00					0	0	HR 15					Y	
	30-70	c	10YR44 00					0	0	HR 15		M			Y	
	70-75	c	10YR44 00					0	0	HR 30		M			Y	IMP, SLST
29	0-30	c	10YR43 00					0	0	HR 15					Y	
	30-50	c	10YR53 00					0	0	SLST 15		M			Y	
	50-70	c	10YR53 62	10YR56 00 F				0	0	SLST 50		M			Y	IMP, SLST
30	0-30	c	10YR43 00					0	0	HR 15					Y	
	30-60	c	10YR54 00					0	0	SLST 15		M			Y	
	60-90	c	10YR66 62	10YR56 00 F				0	0	SLST 15		M			Y	IMP, SLST
31	0-30	c	10YR43 00					0	0	HR 15					Y	
	30-40	c	10YR53 00	10YR56 00 F				0	0	SLST 15		M			Y	IMP, SLST
32	0-30	c	10YR43 00					0	0	HR 15					Y	
	30-80	c	10YR63 00					0	0	SLST 15		M			Y	IMP, SLST
33	0-30	c	10YR54 00					0	0	HR 15					Y	
	30-80	c	10YR66 00					0	0	SLST 15		M			Y	IMP, SLST
34	0-30	c	10YR53 00					0	0	HR 15					Y	
	30-40	c	10YR54 00					0	0	SLST 30		M			Y	
	40-90	c	10YR62 00					0	0	SLST 40		M			Y	IMP, SLST
35	0-30	c	10YR53 00					0	0	0					Y	
	30-90	c	10YR53 56	10YR56 00 C				Y	0	0	0		P		Y	Y
36	0-30	c	10YR54 00					0	0	HR 15					Y	
	30-50	c	25 Y56 00	00M00 00 F				0	0	SLST 15		M			Y	
	50-70	c	10YR63 00					0	0	SLST 40		M			Y	IMP, SLST
37	0-30	c	10YR53 00					0	0	HR 15					Y	
	30-40	c	10YR54 00					0	0	SLST 15		M			Y	
	40-60	c	25 Y66 00					0	0	SLST 40		M			Y	IMP, SLST

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR		POR
38	0-30	c	10YR53 00						0	0	HR	15				Y
	30-70	c	25 Y64 54	10YR56 00	C			Y	0	0	SLST	25	P		Y	Y
39	0-30	c	10YR53 00						0	0	HR	10				Y
	30-70	c	10YR54 00						0	0	SLST	10	M			Y
	70-90	c	10YR66 00						0	0	SLST	10	M		Y	IMP, SLST
40	0-30	c	10YR53 00						0	0	HR	15				Y
	30-50	c	10YR54 00						0	0	SLST	15	M			Y
	50-60	c	10YR66 00						0	0	SLST	25	M		Y	IMP, SLST
41	0-30	c	10YR53 00						0	0	HR	15				Y
	30-60	c	10YR54 00						0	0	SLST	30	M		Y	IMP, SLST
42	0-25	c	10YR53 00						0	0	HR	15				Y
	25-40	c	10YR54 00						0	0	SLST	15	M			Y
	40-45	c	10YR54 00						0	0	SLST	40	M		Y	IMP, SLST
43	0-30	c	10YR53 00						0	0	HR	15				Y
	30-60	c	25 Y53 00	10YR56 00	F				0	0	SLST	40	M		Y	IMP, SLST
44	0-30	c	10YR53 00						0	0	HR	15				Y
	30-70	c	10YR54 00						0	0	SLST	15	M			Y
	70-80	c	10YR66 00	10YR56 00	F				0	0	SLST	25	M		Y	IMP, SLST
45	0-30	c	10YR53 00						0	0	HR	15				Y
	30-80	c	10YR54 00						0	0	SLST	15	M		Y	IMP, SLST
46	0-30	c	10YR53 00						0	0	HR	15				Y
	30-70	c	10YR54 00						0	0	SLST	15	M			Y
	70-80	c	10YR54 00						0	0	SLST	15	M		Y	IMP, SLST
47	0-30	c	10YR53 00						0	0	HR	15				Y
	30-60	c	10YR54 00						0	0	SLST	15	M			Y
	60-70	c	10YR54 00						0	0	SLST	40	M		Y	IMP, SLST
48	0-30	c	10YR53 00						0	0	HR	15				Y
	30-50	c	10YR56 00						0	0	SLST	15	M			Y
	50-80	c	10YR52 62	10YR56 00	C			Y	0	0	SLST	30	P		Y	Y
49	0-30	c	10YR53 00						0	0	HR	15				Y
	30-50	c	10YR54 00						0	0	SLST	15	M			Y
	50-80	c	10YR66 00						0	0	SLST	25	M		Y	IMP, SLST