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**WYCOMBE DISTRICT LOCAL PLAN  
Site 3, High Wycombe, Buckinghamshire**

**Agricultural Land Classification  
ALC Map and Report**

**January 1998**

**Resource Planning Team  
Eastern Region  
FRCA Reading**

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## WYCOMBE DISTRICT LOCAL PLAN SITE 3, HIGH WYCOMBE, BUCKINGHAMSHIRE

### INTRODUCTION

1. This summary report presents the findings of a detailed Agricultural Land Classification (ALC) survey on 47 hectares of land to the south of High Wycombe (south of the M40 motorway). The survey was carried out during January 1998.
2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)<sup>1</sup>, on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with the Wycombe District Local Plan. This survey supersedes any previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of 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 most of the agricultural land on this site was either under permanent grassland or winter cereal production with a small area under field beans. The areas shown as 'Other land' comprise woodland, roads, farm buildings and a college.

### 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 the Table 1 overleaf.
7. The fieldwork was conducted at an average density of 1 boring per hectare. In total, 41 borings and 4 soil pits were described.
8. The small area of Grade 2 (very good quality) land occurs in the far west of the site. The soils tend to comprise slightly stony, fine loamy or fine silty topsoils overlying similar or sometimes heavier textured upper subsoils which vary in stone content. These soils usually overlie chalk at variable depths and are very slightly limited by soil droughtiness.

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<sup>1</sup> FRCA is an executive agency of MAFF and the Welsh Office.

**Table 1: Area of grades and other land**

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	1.9	5.3	4.0
3a	21.4	59.3	45.5
3b	6.7	18.5	14.3
4	6.1	16.9	13.0
Other Land	10.9	N/A	23.2
Total Surveyed Area	36.1	100	76.8
Total site area	47.0	-	100

9. The majority of the site is Subgrade 3a (good quality). These areas are predominantly limited by soil wetness or soil droughtiness, with topsoil stones being equally or more limiting in places. Soils are of two main types. The first, and most common, have variably stony, fine loamy or fine silty topsoils, which overlie poorly drained, clayey subsoils at moderate depths. These soils have a slight wetness limitation which may adversely affect crop growth or impose restrictions on cultivations or grazing by livestock. The second group of soils have similar or sometimes lighter topsoil textures to the first, but have much higher stone contents and coarser subsoil textures throughout the profile. These soils are usually impenetrable to the soil auger at shallow to moderate depths and suffer from a slight droughtiness restriction.

10. Two smaller areas of Subgrade 3b (moderate quality) land occur on the site. The soils within these units are very variable and are restricted to Subgrade 3b due to a combination of topsoil stone or wetness limitations, with some profiles being downgraded because they have been disturbed.

11. A discrete unit of Grade 4 (poor quality) land is mapped to the north east of Heath End Farm. This area of land has been disturbed. Here, the main limitation is severe droughtiness, but the land also suffers from poor drainage, compaction and restricted soil depth.

## **FACTORS INFLUENCING ALC GRADE**

### **CLIMATE**

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

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

14. 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

**Table 2: Climatic and altitude data**

Factor	Units	Values		
		SU 887 905	SU 881 908	SU 874 910
Grid reference	N/A	SU 887 905	SU 881 908	SU 874 910
Altitude	m, AOD	115	130	140
Accumulated Temperature	day°C (Jan-June)	1380	1363	1352
Average Annual Rainfall	mm	707	721	733
Field Capacity Days	days	151	153	156
Moisture Deficit, Wheat	mm	95	94	93
Moisture Deficit, Potatoes	mm	84	82	81
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

15. 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. The figures above suggest that, overall, the site is comparatively cool (in regional terms) as a result of being located at a relatively high altitude. At this locality, moisture deficit figures are slightly lower than the national average, reflecting the elevated altitude. The likelihood of restrictions associated with soil droughtiness may therefore be reduced.

16. 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 adverse effect on the site. The site is climatically Grade 1.

### Site

17. The agricultural land at this site lies at an altitude of 115–140m AOD. The majority of the land at the site is flat or gently sloping with slight undulations and gradients measuring between 0–5°. A small area to the north of Heath End Farm (adjacent to the motorway) has gradients in excess of 7°.

### Geology and soils

18. The published geological information for the site (Geological Survey of England and Wales, 1948) shows the majority of the site to be underlain by Upper Chalk, although a small area in the east of the site (where the land is highest) is underlain by Reading Beds. Superficial drift deposits of Clay-with-flints cover much of the site. However, in areas around Wye Valley Secondary School and Heath End Farm there are drift deposits of glacial gravel (with Bunter Pebbles). A small area in the extreme east of the site is shown as drift deposits of pebbly clay and sand.

19. The most recently published soil information for the site (SSEW, 1983) shows the Marlow association is most likely to cover the entire site with the possibility of the Newmarket 2 association occurring to the north-east of Winchbottom Lane. The former soils are described as 'well drained fine loamy over clayey soils. Some coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging' (SSEW, 1983). The latter soils are described as 'shallow well drained calcareous coarse loamy and sandy soils

over chalk rubble associated with well drained deeper coarse loamy and sandy soils often in an intricate pattern. Slight risk of water erosion' (SSEW, 1983).

20. Upon detailed field examination, soils broadly consistent with the above descriptions were found to exist across the site.

## **AGRICULTURAL LAND CLASSIFICATION**

21. 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.

22. 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**

23. A small area of land (1.9ha) in the west of the site has been mapped as Grade 2 (very good quality agricultural land). The soils in this area are moderately deep and are developed from Clay-with-flints deposits which cap the underlying chalk. The depth to the chalk is variable, as is the amount of stone in the horizons. Very occasional profiles are impenetrable to the soil auger. The soils have both calcareous and non-calcareous medium silty clay loam topsoils which are very slightly to slightly stony (up to 10% total flints, with 3% > 2cm). These overlie similar or slightly heavier textured upper subsoils which are slightly to moderately stony (containing 10–25% total flints). At moderate depths (50–55cm) solid chalk usually occurs. According to observations made at Pit 4, the chalk is rootable to a depth of 100cm, beyond which it becomes very hard and compacted. The soils are generally well drained (Wetness Class I) and suffer from a minor droughtiness limitation. These profiles have reserves of available water which can be insufficient for crop requirements in some years which, given the local climatic conditions, leads to Grade 2 being appropriate. Despite these slight limitations, this land is still capable of supporting a wide range of arable and horticultural crops whose yields are generally high but may be lower or more variable than Grade 1 land.

### **Subgrade 3a**

24. Good quality agricultural land is mapped across the majority of the site. The land is limited by soil wetness, topsoil stoniness and/or soil droughtiness. Two main variants occur within this unit.

25. The majority of the Subgrade 3a land is affected by soil wetness and/or topsoil stoniness. Soil profiles mainly comprise non-calcareous, medium silty clay loam or medium clay loam topsoils which are slightly stony (containing up to 16% total flint, with 11% >2cm and 5% >6cm diameter). These sometimes overlie slightly stony (up to 10% total flint), non-calcareous heavy clay loam or heavy silty clay loam upper subsoils. These subsoils are gleyed but are porous and moderately structured. At variable depths of between 22cm and 52cm, poorly structured, dense, reddish brown clay occurs, which is developed from drift deposits of clay-with-flints. Chalk rubble deposits were found beneath the clay in many of the soil profiles at depths between 58cm and 90cm. Despite the chalk at depth, there is sufficient thickness of slowly permeable clay in these profiles to cause soil drainage to be impeded to the extent that Wetness Class III is appropriate which, when combined with local climatic conditions and the

topsoil textures, gives rise to a land classification of Subgrade 3a. Pit 3 (see Appendix II) is typical of these soils. Soil wetness such as this may adversely affect plant growth or impose restrictions on cultivations or grazing by livestock.

26. In addition to the soil wetness limitation described above, the amount of topsoil stone in some profiles is equally restricting or even solely restricting in places. This limitation has the effect of impeding cultivation, harvesting and crop growth, and increasing the cost of cropping (in terms of the wear and tear to machinery, and reducing yields).

27. The second group of soils within this unit occurs in the east of the site and is affected by soil droughtiness alone or in conjunction with topsoil stoniness. Many of the soils are impenetrable to the auger at moderate depths (40–70cm). Typical soil observations comprise non-calcareous, slightly to moderately stony (up to 25% total flints, with 13% > 2cm and 8% > 6cm in size) medium clay loam and medium sandy loam topsoils. Upper subsoils comprise similar or slightly lighter textures and are slightly to moderately stony (containing up to 40% flint). Soil inspection Pit 2 (Appendix II) is representative of this soil type (despite being limited to Subgrade 3b on topsoil stones). The profiles are permeable and well drained (Wetness Class I). The combination of soil texture and hard stone restricts the water available to crops such that there is a risk of drought stress to the plants in most years. The amount of topsoil stone in some profiles is also limiting in places (the effect of this is described in paragraph 26 above). Overall, land of Subgrade 3a quality could be expected to produce moderate yields of a wide range of crops and moderate to high yields of a narrow range of crops, principally cereals and grass.

### **Subgrade 3b**

28. A total of 6.7 hectares of moderate quality agricultural land has been mapped. This occurs in two discrete units. The first, either side of Winchbotton Lane, the second, lying in the area close to Heath End Farm. The principal limitations are topsoil stoniness, soil wetness, and, very occasionally, disturbance.

29. The soils are very variable in nature but the majority of both areas are restricted to Subgrade 3b on the basis of topsoil stoniness. Soil profiles tend to comprise moderately stony, medium clay loam topsoils (30% total flint, with 20% >2cm and 8% > 6cm diameter). In some profiles, shallow upper subsoils are encountered, which vary in texture from clay loams to medium sandy silt loams and contain up to 48% total flints. The profiles are impenetrable to the soil auger at depths between 30cm and 45cm. The presence of more than 15% flints larger than 2 cm diameter restricts the land quality to Subgrade 3b.

30. Some discrete areas within the Subgrade 3b unit are less stony but are limited by soil wetness. Soils with a wetness limitation in the Subgrade 3b unit are similar to those soils already described in paragraph 25 above, except that the degree of waterlogging within the profile is greater because they are slowly permeable higher up the profile and have more prominent mottling. In addition to this, to the South of Heath End Farm, discrete areas of land appear to have been disturbed (as evidenced by the uneven topography).

#### Grade 4

31. Just over six hectares of poor quality agricultural land (Grade 4) has been mapped to the north of Heath End Farm (adjoining a small stretch of the M40 motorway). This area is believed to have been disturbed in the past and is now in a state whereby most mechanised operations are not feasible and, as such, is only suited to permanent grazing. The soils become impenetrable to the auger between 20 cm and 25cm depth. Soil Pit 1 (Appendix II) is representative of these soils. A shallow topsoil of medium clay loam texture, which is slightly stony (10% total flints), lies over a very firm, compacted, intermixed upper subsoil which impedes drainage. The upper subsoil is very stony containing 40% total hard rock, (which includes a mixture of flint, concrete and other foreign material) and textures as a heavy clay loam overall. Between 40cm and 60 cm depth, a very stony, very compacted clay is observed (with similar stone contents to those described in the upper subsoil). Roots are observed down to a depth of 40cm (the top of the very compacted clay) and are unlikely to be able to penetrate further. Consequently, a depth of 40cm was used as the maximum limit of rooting and droughtiness calculations were stopped at this depth. Moisture balance calculations indicate a severe soil droughtiness restriction to the extent that Grade 4 is considered appropriate for this area of disturbed land.

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## SOURCES OF REFERENCE

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## 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 that 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 that restricts 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)

## 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:

<b>ARA:</b> Arable	<b>WHT:</b> Wheat	<b>BAR:</b> Barley
<b>CER:</b> Cereals	<b>OAT:</b> Oats	<b>MZE:</b> Maize
<b>OSR:</b> Oilseed rape	<b>BEN:</b> Field beans	<b>BRA:</b> Brassicae
<b>POT:</b> Potatoes	<b>SBT:</b> Sugar beet	<b>FCD:</b> Fodder crops
<b>LIN:</b> Linseed	<b>FRT:</b> Soft and top fruit	<b>FLW:</b> Fallow
<b>PGR:</b> Permanent pasture	<b>LEY:</b> Ley grass	<b>RGR:</b> Rough grazing
<b>SCR:</b> Scrub	<b>CFW:</b> Coniferous woodland	<b>OTH:</b> Other
<b>DCW:</b> Deciduous woodland	<b>BOG:</b> Bog or marsh	<b>SAS:</b> Set-Aside
<b>HTH:</b> Heathland	<b>HRT:</b> Horticultural crops	<b>PLO:</b> Ploughed

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:

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

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

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

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

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	<b>WK:</b> weakly developed	<b>MD:</b> moderately developed
	<b>ST:</b> strongly developed	
Ped size	<b>F:</b> fine	<b>M:</b> medium
	<b>C:</b> coarse	
Ped shape	<b>S:</b> single grain	<b>M:</b> massive
	<b>GR:</b> granular	<b>AB:</b> angular blocky
	<b>SAB:</b> sub-angular blocky	<b>PR:</b> prismatic
	<b>PL:</b> platy	

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

<b>L:</b> loose	<b>VF:</b> very friable	<b>FR:</b> friable	<b>FM:</b> firm	<b>VM:</b> very firm
<b>EM:</b> extremely firm		<b>EH:</b> 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:

<b>APW:</b>	available water capacity (in mm) adjusted for wheat
<b>APP:</b>	available water capacity (in mm) adjusted for potatoes
<b>MBW:</b>	moisture balance, wheat
<b>MBP:</b>	moisture balance, potatoes

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	DRT					
1	SU87009120	CER S	2	S32	32	3	3A	120	26	98	15	2			WE	3A	SEE PIT 3
2	SU87109120	CER S	1	S28	28	3	3A	81	-13	89	6	3A			WE	3A	SEE PIT 3
3	SU87109110	CER				1	1	88	-6	93	10	3A			DR	2	I60 SEE 4P
4	SU87209110	CER E	1	S27		1	1	90	-4	92	9	3A			DR	2	ROOTS100 SEE4P
5	SU87309110	CER E	1	S28	28	3	3A	92	-2	99	16	3A			WE	3A	SEE PIT 3
6	SU87309100	CER S	2			1	1	96	2	95	12	3A			DR	2	ROOTS 100, 4P
7	SU87409100	CER S	2	S52	52	3	3A	99	5	103	20	2			WE	3A	SEE PIT 3
8	SU87509100	CER		S30	30	3	3B		0		0				WE	3B	SEE PIT 3
9	SU87529090	PGR		0		2	2	44	-50	44	-39	3B		Y	ST	3B	IMP 30
10	SU87629090	PGR				1	1	50	-44	50	-33	3B			ST	3B	IMP 40
11	SU87709090	PGR		S25	25	3	3A	83	-11	91	8	3A			WE	3A	SEE PIT 3
12	SU87809090	PGR		50	50	3	3A	96	2	106	23	3A			WE	3A	SEE PIT 3
13	SU88409090	CER		S32	32	3	3A	120	26	98	15	3A			WE	3A	SEE PIT 3
14	SU88509090	CER NE	2	S50	50	3	3A	101	7	103	20	2			WE	3A	SEE PIT 3
15	SU88609090	PGR N	4			1	1	28	-66	28	-55	4		Y	DS	4	IMP20 SEE 1P
16	SU88709090	PGR N	5			1	1	33	-61	33	-50	4		Y	DS	4	IMP20 SEE 1P
17	SU88809090	RGR N	4	S90		1	1	121	27	88	5	2			DR	2	ALSO STONES
18	SU88909090	RGR NE	4			1	1	74	-20	59	-24	3B			DR	3A	IMP70 SEE 2P
19	SU87809080	BEN E	1	S25	25	3	3A	96	2	99	16	3A			WE	3A	SEE PIT 3
20	SU87909080	BEN E	1	S22	22	3	3A	99	5	97	14	2			WE	3A	SEE PIT 3
21	SU88109080	BEN E	1	S52	52	3	3A	109	15	108	25	2			WE	3A	SEE PIT 3
22	SU88109080	BEN E	1	S35	35	3	3A	111	17	102	19	2			WE	3A	SEE PIT 3
23	SU88209080	CER S	1	S26	26	3	3A	79	-15	85	2	3A			WE	3A	ALSO TS SEE 3P
24	SU88309080	CER E	1	S26	26	3	3A	83	-11	92	9	3A			WE	3A	SEE PIT 3
25	SU88409080	CER S	2	28	40	4	3B	88	-6	99	16	3A			WE	3B	SEE PIT 3
26	SU88509080	CER W	2			1	1	55	-39	55	-28	3B			DR	3A	IMP 38 SEE 2P
27	SU88609080	PGR N	3			1	1	30	-64	30	-53	4		Y	DS	4	I20 SEE 1P
28	SU88709080	PGR N	2			1	1	71	-62	74	-51	4		Y	DS	4	I20 SEE 1P
29	SU88809080	PGR NW	2			1	1	49	-45	49	-34	3B			ST	3B	I40 SEE 2P
30	SU88909080	RGR NE	5	S30		1	1	71	-23	71	-12	3B			DR	3A	I50 SEE 2P
31	SU88109070	CER S	1	S24	24	3	3A	79	-15	85	2	3A			WE	3A	ALSO ST SEE 3P
32	SU88209070	CER S	1			1	1	90	-4	99	16	3A			ST	3A	
35	SU88509070	CER W	2			1	1	89	-5	94	11	3A			ST	3A	I75 SEE 2P
36	SU88609070	PGR				1	1	64	-30	64	-19	3B			ST	3A	I45 SEE 2P
37	SU88709070	PGR SE	1			1	1	47	-47	47	-36	4		Y	DS	4	I25 SEE 1P
38	SU88789072	RGR				1	1	64	-30	64	-19	3B			DR	3A	I50 SEE 2P
39	SU88909082	PGR NW	2			1	1	87	-7	92	9	3A			DR	3A	I60 SEE 2P
40	SU88209064	CER SE	1			1	1	119	25	104	21	2			ST	3A	
44	SU88579060	PGR S	5			1	1	109	15	105	22	2			DR	2	Q DISTURBED
45	SU88689060	PGR SE	3			1	1	52	-42	52	-31	3B			ST	3B	I42 SEE 2P
47	SU88709050	PGR SE	5			1	1	62	-32	62	-21	3B			DR	3A	I42 SEE 2P
1P	SU88609080	PGR N	3	S15	15	4	3B	40	-54	40	-43	4		Y	DS	4	COMPACT SEE 1P

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	SPL	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
					CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT		
2P	SU88689060	PGR SE	3		1	1	79	-15	67	-16	3A					ST 3B	3A DROUGHT
3P	SU87809080	BEN		S23 23	3	3A	113	19	91	8	2					WE 3A	SL GLEYED 23
4P	SU87209110	CER E	1		1	1	110	16	97	14	2					DR 2	ROOTS 100CM

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- PED			----STONES-----			STRUCT/	SUBS	SPL	CALC				
				COL	ABUN	CONT	COL.	GLE	>2					>6	LITH	TOT	CONSIST
1P	0-15	MCL	10YR3242						0	0	HR	10	WDCSAB	FR			+10% CH
	15-40	HCL	10YR4658						0	0	HR	40	MASSVE	VM P	Y	Y	HARD, ROOTS 40
	40-60	C	10YR4658						0	0	HR	40	MASSVE	VM P	Y	Y	COMPACT, VSPL
2P	0-30	MCL	10YR42						16	3	HR	28					
	30-52	SCL	10YR54						0	0	HR	48		M			
	52-120	SCL	10YR56						0	0	HR	65		P			W/T 75CM
3P	0-23	MCL	10YR42						3	0	HR	8					
	23-60	C	75YR54	75YR58	C			S	0	0	HR	15	MDCAB	FM P	Y	Y	DENSE
	60-87	C	10YR68	75YR58	M			S	0	0	HR	15	MDCAB	FM P	Y	Y	FIRM
	87-120	CH	10YR8166						0	0	HR	5		P			Y
4P	0-25	MZCL	10YR42						3	0	HR	8					
	25-55	HZCL	10YR5354	75YR56	C			S	0	0	HR	25	MDCSAB	FR M			LOOSE
	55-100	CH	10YR8152						0	0	HR	5		P			Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC		
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR		POR	IMP
1	0-32	MCL	10YR42						4	0	HR	10					
	32-60	C	75YR54	75YR58	C		S	0	0	HR	10	P		Y		FIRM	
	60-90	C	10YR68	75YR58	M		S	0	0	HR	5	P		Y		DENSE	
	90-120	CH	10YR81						0	0	HR	5	P		Y		CH RUBBLE
2	0-28	MCL	10YR42						3	0	HR	10					C+40%CH V SPL
	28-58	C	10YR54	75YR58	C		S	0	0	HR	10	P		Y			
	58-65	C	75YR5444	75YR58	M		S	0	0	HR	10	P		Y		IMP FLINTS 65	
3	0-30	MZCL	10YR42						3	0	HR	8					
	30-60	HZCL	75YR44						0	0	HR	10	M				IMP 60 FLINT
4	0-27	MCL	10YR42						2	0	HR	6					
	27-45	C	10YR54	75YR58	M		S	0	0	HR	5	P					
	45-75	CH	10YR8154						0	0	HR	5	P		Y		ROOTS TO 100CM
5	0-28	MCL	10YR42						2	0	HR	6					
	28-58	C	10YR54	75YR58	C		S	0	0	HR	5	P		Y		DENSE, FIRM	
	58-75	C	10YR56						0	0	CH	50	M		Y		CHALK RUBBLE
6	0-28	MZCL	10YR42						3	0	HR	10					Y
	28-50	MZCL	10YR44						0	0	CH	50	M				Y
	50-80	CH	10YR81						0	0	HR	5	P		Y		ROOTS TO 100CM
7	0-30	MCL	10YR42						2	0	HR	8					
	30-52	HCL	10YR4344						0	0	HR	10	M				LOOSE
	52-80	C	75YR54	75YR58	C		S	0	0	HR	10	P		Y		FIRM, DENSE	
8	0-30	HCL	25Y 42						4	0	HR	10					
	30-60	C	10YR54	75YR58	C		S	0	0	HR	10	P		Y		DENSE/FIRM	
9	0-30	MCL	10YR42	10YR46	C			Y	16	5	HR	25					DISTURBED?
10	0-26	MCL	10YR43						20	8	HR	30					
	26-40	HCL	10YR56						0	0	HR	30	M				IMP FLINTS
11	0-25	MZCL	10YR42						9	0	HR	15					
	25-50	C	10YR54	75YR66	C		S	0	0	HR	20	P		Y		DENSE, FIRM	
	50-65	C	10YR54	75YR66	C F		S	0	0	HR	10	P		Y		DENSE	
12	0-30	MCL	10YR42						3	0	HR	8					
	30-50	HCL	10YR53						0	0	HR	10	M				
	50-75	C	10YR6364	75YR56	C		Y	0	0	HR	15	P		Y		IMP FLINTS	
13	0-32	MCL	10YR42						5	2	HR	12					
	32-70	C	10YR54	75YR58	C		S	0	0	HR	5	P		Y		DENSE, FIRM	
	70-120	CH	10YR81						0	0	HR	5	P		Y		

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----		PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC			
				COL	ABUN		CONT	GLE	>2		>6	LITH	TOT		STR	POR	IMP
14	0-30	MCL	10YR42					5	1	HR	10						
	30-50	HCL	10YR46					0	0	HR	10		M				
	50-70	C	10YR44	10YR58	C		S	0	0	HR	5		P		Y	DENSE	
	70-85	C	10YR64	75YR58	C		S	0	0	HR	5		P		Y	DENSE, FIRM	
15	0-10	MZCL	10YR42					0	0	HR	5					Y	
	10-20	MZCL	25Y 52					0	0	CH	50		M			Y	IMP. DIST.
16	0-20	MZCL	10YR3242					5	1	HR	8					Y	IMP. DIST.
17	0-40	MSL	10YR32					8	3	HR	17						
	40-65	LMS	10YR5456					0	0	HR	10		G				LOOSE
	65-90	MS	75YR56					0	0	HR	5		G				LOOSE
	90-120	SCL	10YR66	75YR5658	C		S	0	0	HR	3		M				LOOSE
18	0-30	MSL	10YR32					13	5	HR	25						
	30-65	MS	10YR5456					0	0	HR	10		G				FRIABLE
	65-70	MS	10YR5456					0	0	HR	15		G		Y		LOOSE, IMP.
19	0-25	MZCL	10YR42					3	0	HR	8						
	25-55	C	10YR54	75YR56	C		S	0	0	HR	5		P		Y		DENSE
	55-80	ZC	10YR68	75YR68	C		S	0	0	CH	45		M		Y		IMP 80 SEE 3P
20	0-22	MZCL	10YR42					3	0	HR	8						
	22-50	C	10YR54	75YR56	C		S	0	0	HR	5		P		Y		DENSE
	50-90	C	10YR68	75YR5658	C		S	0	0	HR	10		P		Y		FIRM
21	0-30	MZCL	10YR42					3	0	HR	8						
	30-52	HZCL	10YR44					0	0	HR	10		M				
	52-90	C	10YR68	75YR68	C		S	0	0	HR	10		P		Y		DENSE, FIRM
22	0-35	MZCL	10YR42					6	0	HR	10						
	35-85	C	10YR54	75YR68	C		S	0	0	HR	10		P		Y		DENSE, FIRM
	85-100	ZC	75YR54	75YR58	C		S	0	0	CH	25		M		Y		CHALK RUBBLE
23	0-26	HCL	10YR43					11	5	HR	15						
	26-52	C	10YR5444	75YR5658	C		S	0	0	HR	2		P		Y		DENSE
	52-62	ZC	10YR64	75YR5658	C		S	0	0	CH	15		P		Y		FIRM
24	0-26	HCL	10YR43					11	4	HR	15						
	26-62	C	10YR5444	75YR5658	C		S	0	0	HR	10		P		Y		DENSE
	62-72	ZC	10YR68	75YR58	M		S	0	0	HR	5		P		Y		FIRM
25	0-28	MCL	10YR42					5	2	HR	12						
	28-40	HCL	10YR53	75YR58	C		Y	0	0	HR	10		M				LOOSE
	40-70	C	10YR53	75YR58	C		Y	0	0	HR	5		P		Y		DENSE, FIRM
26	0-30	MCL	10YR42					12	5	HR	20						
	30-38	MSL	10YR56					0	0	HR	30		M				IMP, FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---		PED COL.	---STONES---			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN		CONT	GLEY	>2		>6	LITH	TOT		STR
27	0-20	MCL	10YR42					0	0	HR	10			Y	IMP. DIST.
28	0-20	MZCL	10YR4252					0	0	CH	5			Y	IMP. DIST.
29	0-30	MCL	10YR42					18	0	HR	30				
	30-40	MCL	10YR53					0	0	HR	40	M			IMP 40, GRAVELLY
30	0-30	MSL	10YR32					6	0	HR	10				
	30-50	MSL	10YR43	75YR46	C		S	0	0	HR	20	M			IMP 50, GRAVELLY
31	0-24	MCL	10YR43					11	4	HR	15				
	24-52	C	10YR54	75YR5658	C		S	0	0	HR	2	P	Y		DENSE, FIRM
	52-62	ZC	10YR68	75YR5658	M		S	0	0		0	P	Y		FIRM
32	0-26	MCL	10YR42					12	5	HR	17				
	26-45	MCL	10YR44					0	0	HR	5	M			LOOSE, FRIABLE
	45-65	HCL	10YR44					0	0	HR	5	M			IMP 65, FLINTS
35	0-30	MCL	10YR43					13	6	HR	18				
	30-72	MSL	10YR54					0	0	HR	20	M			IMP, FLINTS
36	0-30	MCL	10YR32					13	0	HR	18				
	30-40	MSZL	10YR32					0	0	HR	25	M			
	40-45	MSZL	10YR42					0	0	HR	35	M			IMP, FLINTS
37	0-25	FSZL	10YR42					9	0	HR	15				IMP. DIST.
38	0-35	MCL	10YR32					13	0	HR	20				
	35-50	SCL	10YR53					0	0	HR	35	M			IMP, GRAVELLY
39	0-30	MCL	10YR42					6	0	HR	10				
	30-60	MCL	10YR54					0	0	HR	10	M			IMP, GRAVELLY
40	0-27	MCL	10YR42					11	3	HR	15				
	27-70	MCL	10YR4454					0	0	HR	10	M			FRIABLE
	70-98	SCL	75YR46					0	0	HR	10	M			LOOSE, IMP
44	0-20	MCL	10YR32					3	0	HR	10				
	20-40	MSZL	10YR42					0	0	HR	15	M			FRIABLE
	40-60	MCL	10YR42					0	0	HR	5	M			LOOSE
	60-85	SCL	10YR42					0	0	HR	20	M			LOOSE
	85-90	LMS	10YR58					0	0	HR	45	M			IMP. DIST.
45	0-20	MCL	10YR32					16	3	HR	28				
	20-38	MCL	10YR32					0	0	HR	40	M			
	38-42	MCL	10YR53					0	0	HR	50	M			IMP, GRAVELLY
47	0-25	MCL	10YR42					2	0	HR	5				
	25-40	MCL	10YR43					0	0	HR	30	M			
	40-42	MCL	10YR53					0	0	HR	30	M			IMP, GRAVELLY