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**VALE OF WHITE HORSE LOCAL PLAN  
LAND NORTH OF GROVE  
Objector sites 169/468 & 107/237**

**Agricultural Land Classification  
Semi-detailed survey**

**October 1996**

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

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# AGRICULTURAL LAND CLASSIFICATION REPORT

## VALE OF WHITE HORSE LOCAL PLAN LAND NORTH OF GROVE, OXFORDSHIRE SEMI-DETAILED SURVEY

### INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of approximately 77 ha of land on the northern fringe of Grove in Oxfordshire. The survey was carried out during October 1996. The report includes ALC information for two slightly different objector sites - representation numbers 107/237 and 169/468; objection 169/468 is wholly contained within the larger objection site 107/237.
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food's (MAFF) Land Use Planning Unit, Reading, in connection with the preparation of the Vale of White Horse Local Plan. This survey supersedes previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group in ADAS. 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 land use on the site was a mixture of permanent grass and recently ploughed land. The areas mapped as 'Other' include farm buildings, farm tracks, public open space, an engineering complex and a cemetery.

### SUMMARY

5. The findings of the survey are shown on the enclosed two ALC maps. The maps have been drawn at a scale of 1:15,000; they are 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 separately in Tables 1 and 2 for the two objector sites.

Table 1: Area of grades and other land - Objector site 107/237

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
2	21.7	28.3	38.3
3a	25.5	33.2	45.0
3b	9.5	12.4	16.7
Other land	20.0	26.1	-
Total surveyed area	56.7	73.9	100
Total site area	76.7	100	-

Table 2: Area of grades and other land - Objector site 169/468

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
2	21.7	37.4	45.9
3a	24.1	41.6	50.9
3b	1.5	2.6	3.2
Other land	10.7	18.4	-
Total surveyed area	47.3	81.6	100
Total site area	58.0	100	-

7. The fieldwork was conducted at an average density of 1 boring per 1.7 hectares. A total of 34 borings and 3 soil pits was described.

8. The range of land quality on the site includes Grade 2 (very good quality agricultural land), Subgrade 3a (good quality) and Subgrade 3b (moderate quality). The best quality land has a slight soil workability limitation as the main restriction. Here, clay or heavy clay loam calcareous topsoils overlie subsoils that are also calcareous but which show very little signs of significant wetness. The calcareous nature of these soils improves their structure and, hence, makes them better drained and easier to cultivate.

9. The Subgrade 3a land experiences a more significant wetness limitation than the adjacent Grade 2. These soils are variable and are not always calcareous in the topsoil, hence are not as easy to cultivate. Some show clear signs of shallow wetness, some do not, presumably related to varying fluctuations in groundwater within this mapping unit.

10. The area of Subgrade 3b is a distinct section in the extreme west of the site, where very clear evidence of shallow wetness in clay soils causes a significant downgrading.

## 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 3 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 3: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SU400907	SU404911
Altitude	m, AOD	75	70
Accumulated Temperature	day°C (Jan-June)	1437	1443
Average Annual Rainfall	mm	649	643
Field Capacity Days	days	139	137
Moisture Deficit, Wheat	mm	107	109
Moisture Deficit, Potatoes	mm	100	102
Overall climatic grade	N/A	Grade 1	Grade 1

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; there are also no local climatic factors such as exposure or frost risk affecting the site. The area is climatically Grade 1.

#### Site

16. The site is flat, lying at an altitude of between 70-75 metres. Nowhere on the site are gradient, microrelief, flooding seen to be significant.

#### Geology and soils

17. The published geological information for the site (BGS, 1971) shows a complicated geology, with several thin bands running north-south. Moving from west to east across the site, these are: Gault Clay, Kimmeridge Clay, Alluvium, Kimmeridge Clay, Gault Clay, Second Terrace deposits, Gault Clay, First Terrace deposits, Alluvium, and First Terrace deposits.

18. The published soils information for the site (SSEW, 1973) shows the majority of the area as soils of the Grove Series (described as gleyed calcareous soils - fine loamy or clayey over gravelly drift with chalk and malmstone). West of Cow Lane, there are soils of the Rowsham Series (surface water gley soils - described as clayey, or fine loamy over clayey, or drift over clay).

#### AGRICULTURAL LAND CLASSIFICATION

19. The details of the classification of the site are shown on the attached ALC maps and the area statistics of each grade are given in Tables 1 & 2, pages 1 & 2.

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 III.

### **Grade 2**

21. There is a central belt of very good quality land running through the site. Soil Pit 3 is representative of the soils in this unit. Heavy clay loam topsoils sit over clay subsoils, with medium clay loam lower subsoils extending to depth. All of the horizons are calcareous. These soils show very little evidence of soil wetness; the pit, for example, is gleyed below 100cm. The structures of the subsoils are not slowly permeable, and these soils are therefore placed in Wetness Class I. However, given the heavy nature of the topsoil textures, in the prevailing climatic regime, there is a slight workability limitation which restricts this land to Grade 2. The presence of a calcareous topsoil and subsoil promotes better structural conditions than would be the case for a non-calcareous soil, and means that such soils will also be more workable.

### **Subgrade 3a**

22. Land in this subgrade experiences a workability or wetness limitation. Soil Pit 1 is typical of some of the soils, and reveals clay topsoils over subsoils of a similar texture, passing into heavy clay loams in the lower subsoil. These soils are calcareous in the subsoil but not always calcareous in the topsoil; the pit is not calcareous, for example. Soft calcareous gravelly horizons occur in the pit from 38cm, with stone contents in the range 25–33%. There is no evidence of wetness in the profiles, and the structures are not slowly permeable, meaning that these soils may be placed in Wetness Class I. The subsoils exhibit moderate structural conditions from the point of view of water holding capacity. This, in combination with the textures and stone contents, means that there is sufficient available water to qualify for at least Subgrade 3a (the pit was only dug to 90cm, but it is assumed that the soil resource will extend further). The fact that the topsoils are clay in texture and generally non-calcareous (certainly not consistently calcareous) means that, even though they fall into Wetness Class I, they cannot be graded higher than Subgrade 3a due to a significant soil workability limitation.

23. There is, however, significant variation within this subgrade, presumably related to the to the variable geology and fluctuations in the local groundwater table. Some soils do show evidence of gleying, above or below 40cm, some show evidence of slowly permeable subsoils, some have heavy clay loam topsoils and some are calcareous in the topsoil. As a result, there is a range of grades for the various borings, but the range seems to be such that Subgrade 3a is still the appropriate grade at this level of fieldwork.

### **Subgrade 3b**

24. The western end of the site falls into this subgrade as a result of a significant soil wetness limitation. Soil Pit 2 is typical of the soils in this area. Clay topsoils overlie clay subsoils that are clearly gleyed and possess slowly permeable horizons. The subsoil structures are moderately developed coarse prismatic and the profiles are placed in Wetness Class IV. This degree of wetness will significantly restrict the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock as well as adversely affecting crop growth and development.

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## SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No.253, Abingdon*.  
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 (1973) *Soils of the Wantage and Abingdon District*  
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 WETNESS CLASSIFICATION

#### Definitions of Soil Wetness Classes

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

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

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#### Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

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<sup>1</sup> The number of days is not necessarily a continuous period.

<sup>2</sup> 'In most years' is defined as more than 10 out of 20 years.

**APPENDIX III**

**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.

<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>DCW:</b> Deciduous Wood		
<b>HTH:</b> Heathland	<b>BOG:</b> Bog or Marsh	<b>FLW:</b> Fallow
<b>PLO:</b> Ploughed	<b>SAS:</b> Set aside	<b>OTH:</b> Other
<b>HRT:</b> 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.

<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>EX:</b> Exposure
<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>ST:</b> Topsoil Stoniness		

## Soil Pits and Auger Borings

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

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

<b>F:</b> Fine (more than 66% of the sand less than 0.2mm)
<b>M:</b> Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C:</b> 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.

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

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

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

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

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

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

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

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

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

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
1P	SU39809080	PGR			1	3A	106	-3	100	-2	3A			WK	3A	NOCALTOP
2P	SU39709100	PGR			4	3B	079	-30	082	-20	3B			WE	3B	
3P	SU40559100	LEY	100		1	2	139	30	109	7	2			WK	2	PIT80CM
4	SU40009120	PGR			2	3A	139	30	104	2	2			WE	3A	QWC QCAL
6	SU40209120	PGR	042	042	3	3B	086	-23	092	-10	3B			WE	3B	QCALC
8	SU40409120	PGR	065		1	2	109	0	110	8	3A			DR	3A	I80-Q2WD
15	SU39609110	PGR	000	028	4	3B	083	-26	086	-16	3B			WE	3B	
17	SU39809110	PGR			2	3B	049	-60	049	-53	4			WE	3B	IMPX2QWC
20	SU40109110	PGR	030		2	3A	133	24	109	7	2			WE	3A	CALCSOIL
22	SU40309110	PGR	050	050	2	2	108	-1	108	6	3A			DR	3A	I85Q2WD
29	SU39409100	PGR	000	028	4	3B	080	-29	083	-19	3B			WE	3B	
32	SU39709100	PGR	000	035	4	3B	082	-27	085	-17	3B			WE	3B	
35	SU40009100	PGR	045		1	2	136	27	114	12	2			WD	2	CALCSUB
37	SU40209100	PGR	035	055	3	3A	112	3	103	1	3A			WE	3A	ISTNS95
39	SU40409100	LEY	080		1	2	000	0	000	0				WK	2	CALCTOP
40	SU40509100	LEY			1	2	110	1	116	14	3A			WK	2	NOGLEY
43	SU40809100	LEY	028		2	3A	079	-30	082	-20	3B			WE	3A	CALCTOP
45	SU39709090	PGR		025	4	3B	000	0	000	0				WE	3B	
47	SU39909090	PGR	030		2	3A	092	-17	099	-3	3A			WE	3A	CALCSUB
49	SU40109090	PGR			1	2	119	10	114	12	2			DR	2	ICHDR 90
51	SU40309090	PGR			1	2	076	-33	076	-26	3B			DR	3B	IGH50Q3A
53	SU40509090	LEY			1	2	116	7	115	13	2			WK	2	CALCTOP
55	SU40709090	LEY	030		2	3A	096	-13	110	8	3A			WE	3A	POSSPPF
58	SU39709080	PGR			2	3B	073	-36	073	-29	3B			WE	3B	NCA IMP
59	SU39809080	PGR	030		2	3A	083	-26	086	-16	3B			WE	3A	CALC SUB
61	SU40009080	PGR			1	2	110	1	114	12	3A			DR	3A	IMP80Q2
63	SU40209080	PGR			1	2	151	42	115	13	1			WK	2	
65	SU40409080	PL0			1	2	152	43	114	12	1			WK	2	NO GLEY
67	SU40609080	PL0	035		2	3A	079	-30	079	-23	3B			WE	3A	CALCTOP
69	SU40009070	PGR			1	2	080	-29	080	-22	3B			DR	3B	I50Q3ADR
70	SU40109070	PGR			1	2	144	35	115	13	1			WK	2	
71	SU40209070	PGR	060		1	2	125	16	117	15	2			WK	2	CALCTOP
72	SU40309070	PL0			1	2	083	-26	085	-17	3B			WK	2	IMP
74	SU40509070	PL0	040		2	3A	085	-24	092	-10	3B			WE	3A	CALTOP
76	SU40709070	PL0	028	028	4	3B	079	-30	082	-20	3B			WE	3B	POSS SPL
77	SU40209060	PGR			1	2	088	-21	095	-7	3B			WK	2	IMP
79	SU40609060	PL0	020		2	3A	106	-3	106	4	3A			WE	3A	CALCTOP

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED	-----STONES-----			STRUCT/	SUBS						
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1P	0-20	c	10YR32 00					0	0	HR	1							
	20-38	c	25Y 42 00					0	0	HR	10	STCSAB	FM	M				Y
	38-60	c	05Y 52 00					0	0	GS	33			M				Y
	60-90	hc1	05Y 63 00					0	0	GS	25			M				Y
2P	0-25	c	10YR32 00	10YR56 00	C			Y	0	0	0							
	25-55	c	10YR42 00	10YR56 00	M			Y	0	0	0	MCP	VM	P	Y			
3P	0-25	hc1	10YR42 00					0	0	HR	1							Y
	25-52	c	10YR41 00					0	0	HR	1	MCSAB	FM	M				Y
	52-100	mc1	25Y 72 00					0	0		0	MASS	FR	P				Y
	100-120	mc1	25Y 72 00	75YR58 00	C			Y	0	0	GS	5			M			Y
4	0-25	c	10YR32 00					0	0	HR	1							
	25-35	c	25Y 52 00					0	0		0			M				
	35-75	hc1	25Y 62 00	000C00 00	F			0	0	GS	25			M				Y
	75-120	hc1	05Y 62 00	000C00 00	F			0	0	GS	15			M				Y
6	0-25	c	10YR32 00					0	0	HR	1							
	25-42	c	25Y 52 00					0	0	HR	1			M				
	42-60	c	25Y 62 00	000C00 00	C			Y	0	0	GS	1		P	Y		Y	Y
8	0-25	hc1	10YR41 00					0	0	HR	2							Y
	25-45	hc1	10YR42 52					0	0	CH	20			M				Y
	45-65	hc1	25Y 63 00	10YR56 00	F			0	0	CH	25			M				Y
	65-80	mc1	25Y 61 00	10YR68 00	C			Y	0	0	CH	30		M				Y
15	0-28	hc1	10YR32 00	000C00 00	C			Y	0	0	0							
	28-55	c	25Y 52 00	000C00 00	M			Y	0	0	0			P	Y			Y
17	0-20	c	10YR32 00					0	0	HR	2							
	20-30	c	10YR32 00	000C00 00	F			0	0	HR	2			M				
20	0-30	c	10YR32 00					0	0	HR	2							Y
	30-50	c	05Y 63 00	000C00 00	C	00MN00	00	Y	0	0	HR	2		M				Y
	50-85	c	05Y 62 00	000C00 00	C			Y	0	0	GS	20		M				Y
	85-120	c	05Y 62 00	000C00 00	C			Y	0	0	GS	5		M				Y
22	0-25	hc1	10YR31 41					0	0	CH	2							Y
	25-50	c	25Y 52 00					0	0	CH	10			M				Y
	50-65	c	25Y 52 00	10YR68 00	C	00MN00	00	Y	0	0	CH	10		P			Y	Y
	65-85	hc1	10YR71 00					Y	0	0	CH	50		P			Y	Y
29	0-28	c	10YR32 00	000C00 00	C			Y	0	0	0							
	28-55	c	25Y 52 00	000C00 00	M			Y	0	0	0			P	Y			Y
32	0-35	c	10YR41 00	000C00 00	C			Y	0	0	0							
	35-55	c	25Y 52 00	000C00 00	M	00MN00	00	Y	0	0	HR	1		P	Y			Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
35	0-35	hc1	10YR32 00						0	0	HR	2					
	35-45	c	05Y 64 00 000C00 00 F				00MN00 00		0	0	HR	2	M				Y
	45-55	c	05Y 63 00 000C00 00 C				00MN00 00 Y		0	0	HR	2	M				Y
	55-90	c	05Y 62 00 000C00 00 C				00MN00 00 Y		0	0	GS	20	M				Y
	90-120	c	05Y 72 00 000C00 00 C					Y	0	0	GS	10	M				Y
37	0-25	hc1	10YR31 00						0	0	CH	5					Y
	25-35	c	25Y 41 00						0	0	CH	20	M				Y
	35-55	c	10YR51 71 10YR58 00 C					Y	0	0	CH	50	M				Y
	55-80	c	25Y 51 00 75YR58 00 M					Y	0	0	CH	20	P			Y	Y
	80-95	hzc1	25Y 61 00 75YR58 00 C				00MN00 00 Y		0	0	CH	50	M			Y	Y
39	0-28	hc1	10YR43 00						0	0	HR	1					
	28-45	c	10YR52 00						0	0	HR	1	M				
	45-80	c	10YR52 00 000C00 00 F						0	0	GS	10	M				Y
	80-120	c	25Y 52 00 000C00 00 C					Y	0	0	GS	15	M				Y
40	0-35	hc1	10YR42 00						0	0	HR	1					Y
	35-80	c	25Y 62 00						0	0	GS	5	M				Y
	80-81	c	25Y 52 00						0	0	GS	5	M				Y
43	0-28	c	10YR32 00						0	0	HR	1					Y
	28-48	c	25Y 42 00 000C00 00 C					Y	0	0	GS	2	P	Y			Y
	48-55	c	25Y 62 00 000C00 00 C					Y	0	0	GS	20	M				Y
45	0-25	c	25Y 41 00 10YR58 00 C					Y	0	0		0					
	25-60	c	25Y 51 00 10YR58 00 M				00MN00 00 Y		0	0	HR	3	P			Y	
	60-70	c	25Y 51 00 10YR58 00 M				00MN00 00 Y		0	0	HR	10	P			Y	
47	0-30	c	10YR32 00						0	0	HR	2					
	30-45	c	25Y 32 00 000C00 00 C					Y	0	0	HR	5	M				Y
	45-65	hc1	05Y 52 00 000C00 00 F					Y	0	0	GS	25	M				Y
49	0-28	hc1	10YR31 00						0	0		0					
	28-60	c	10YR41 00 10YR56 00 F						0	0	CH	10	M				Y
	60-75	hc1	10YR41 00						0	0	CH	25	M				Y
	75-90	hc1	10YR41 51						0	0	CH	40	M				Y
51	0-28	hc1	10YR31 00						0	0	CH	5					Y
	28-45	c	10YR41 00 10YR56 00 F						0	0	CH	10	M				Y
	45-50	gh	10YR71 81						0	0		0	P				Y
53	0-30	hc1	10YR42 00						0	0	HR	1					Y
	30-62	c	10YR42 00						0	0	GS	5	M				Y
	62-75	hc1	25Y 52 00						0	0	GS	5	M				Y
	75-85	hc1	25Y 62 00						0	0	GS	10	M				Y
55	0-30	c	25Y 42 00						0	0	GS	1					Y
	30-50	c	25Y 62 00 000C00 00 F				00MN00 00 Y		0	0	GS	2	M				Y
	50-70	c	05Y 62 00 000C00 00 C					Y	0	0	GS	20	M				Y



SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLEYS	>2	>6	LITH		TOT	STR	POR	IMP	SPL
58	0-25	c	10YR32 00						0	0	HR	1					
	25-42	c	10YR42 00						0	0	HR	1		M			
	42-45	c	05Y 42 00						0	0	HR	10		M			Y
59	0-30	c	10YR32 00						0	0	HR	2					
	30-40	c	25Y 52 00 000C00 00 C					Y	0	0	HR	5		M			Y
	40-55	c	05Y 63 00 000C00 00 F					Y	0	0	GS	20		M			Y
61	0-25	hc1	10YR31 00						0	0		0					
	25-40	c	10YR41 42						0	0	CH	5		M			Y
	40-60	c	25Y 42 00 10YR58 00 F						0	0	CH	10		M			Y
	60-70	hc1	25Y 42 00						0	0	CH	30		M			Y
	70-80	sc1	05Y 52 72						0	0	CH	40		M			Y
63	0-25	hc1	10YR31 00						0	0		0					
	25-35	hc1	10YR41 00						0	0		0		M			
	35-100	hc1	10YR41 42						0	0	CH	10		M			Y
	100-120	hc1	10YR41 42						0	0	CH	20		M			Y
65	0-30	c	10YR32 00						0	0	HR	1					Y
	30-48	c	10YR42 00						0	0	HR	1		M			Y
	48-120	hc1	05Y 72 00						0	0		0		M			Y
67	0-30	c	10YR32 00						0	0	GS	1					Y
	30-35	c	25Y 42 00						0	0	GS	2		M			Y
	35-50	c	05Y 52 00 000C00 00 C					Y	0	0	GS	20		M			Y
69	0-25	hc1	10YR31 00						0	0	CH	5					Y
	25-45	c	25Y 43 53 10YR58 00 F						0	0	CH	20		M			Y
	45-50	hc1	25Y 53 72						0	0	CH	50		M			Y
70	0-28	hc1	10YR31 41						0	0		0					
	28-60	hc1	10YR42 00						0	0	CH	10		M			Y
	60-100	c	10YR42 00						0	0	CH	10		M			Y
	100-120	sc1	05Y 53 00 10YR58 00 F						0	0	CH	30		M			Y
71	0-32	hc1	10YR32 00						0	0	HR	1					Y
	32-60	c	10YR32 00						0	0	HR	1		M			Y
	60-90	c	10YR41 00 10YR58 00 C					Y	0	0	GS	1		M			Y
	90-100	hc1	25Y 62 00						0	0	GS	30		M			Y
72	0-32	c	10YR32 00						0	0	HR	1					Y
	32-52	c	25Y 42 00						0	0	GS	5		M			Y
74	0-20	c	10YR32 00						0	0	HR	1					Y
	20-40	c	25Y 42 00						0	0	GS	5		M			Y
	40-60	c	05Y 52 00 000C00 00 C					Y	0	0	GS	20		M			Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----				STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
76	0-28	c	25Y 42 00						0	0	HR	1						Y
	28-55	c	25Y 53 00	000C00	00	C		Y	0	0	GS	1		P	Y		Y	Y
77	0-20	c	10YR42 00						0	0	HR	1						Y
	20-55	c	25Y 52 00						0	0	GS	5		M				Y
	55-60	hc1	25Y 62 00	000C00	00	F			0	0	GS	15		M				Y
79	0-20	c	10YR32 00						0	0	HR	1						Y
	20-50	hc1	25Y 62 00	000C00	00	C		Y	0	0	GS	10		M				Y
	50-90	c	05Y 62 00	000C00	00	F		Y	0	0	GS	20		M				Y

SOIL PIT DESCRIPTION

Site Name : VOWH LP N OF GROVE Pit Number : 1P

Grid Reference: SU39809080 Average Annual Rainfall : 0 mm  
 Accumulated Temperature : 0 degree days  
 Field Capacity Level : 137 days  
 Land Use : Permanent Grass  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	C	10YR32 00	0	1	HR					
20- 38	C	25Y 42 00	0	10	HR		STCSAB	FM	M	Y
38- 60	C	05Y 52 00	0	33	GS				M	Y
60- 90	HCL	05Y 63 00	0	25	GS				M	Y

Wetness Grade : 3A Wetness Class : I  
 Gleying : cm  
 SPL : No SPL

Drought Grade : 3A APW : 106mm MBW : -3 mm  
 APP : 100mm MBP : -2 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Workability

SOIL PIT DESCRIPTION

Site Name : VOWH LP N OF GROVE Pit Number : 2P

Grid Reference: SU39709100 Average Annual Rainfall : 0 mm  
 Accumulated Temperature : 0 degree days  
 Field Capacity Level : 137 days  
 Land Use : Permanent Grass  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	C	10YR32 00	0	0		C				
25- 55	C	10YR42 00	0	0		M	MCP	VM	P	

Wetness Grade : 3B Wetness Class : IV  
 Gleying : cm  
 SPL : No SPL

Drought Grade : 3B APW : 079mm MBW : -30 mm  
 APP : 082mm MBP : -20 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : VOWH LP N OF GROVE Pit Number : 3P

Grid Reference: SU40559100 Average Annual Rainfall : 0 mm  
 Accumulated Temperature : 0 degree days  
 Field Capacity Level : 137 days  
 Land Use : Ley  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	HCL	10YR42 00	0	1	HR					Y
25- 52	C	10YR41 00	0	1	HR		MCSAB	FM	M	Y
52-100	MCL	25Y 72 00	0	0			MASS	FR	P	Y
100-120	MCL	25Y 72 00	0	5	GS	C			M	Y

Wetness Grade : 2 Wetness Class : I  
 Gleying : 100 cm  
 SPL : No SPL

Drought Grade : 2 APW : 139mm MBW : 30 mm  
 APP : 109mm MBP : 7 mm

FINAL ALC GRADE : 2  
 MAIN LIMITATION : Workability