

A1
West Sussex Minerals Plan
Site F: Pitsham Rough, Midhurst
Agricultural Land Classification,
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION, REPORT

WEST SUSSEX MINERALS PLAN

SITE F: PITSHAM ROUGH, MIDHURST

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in West Sussex. The work forms part of MAFF's statutory input to the West Sussex Minerals Plan.
- 1.2 Site F comprises 19.4 hectares of land to the south west of Midhurst in West Sussex. An Agricultural Land Classification (ALC) survey was carried out during April 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 18 borings and three soil inspection pits were described according to MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.
- 1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 The agricultural land at this site was in pasture. At the time of survey large areas were bare soil, the grass having been poached by overwintering cattle. The cattle still occupied the land to the west of the site, being fed from mobile feeders, while the remaining areas were re-seeded. The area mapped as Urban was a well defined unsurfaced fenced track known as 'Pitsham Lane'. The Non-Agricultural land is an area of scrub.
- 1.5 The distribution of grades and subgrades is shown on the attached ALC map, the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	8.4	43.3	44.4
3b	10.1	52.1	53.4
4	0.4	2.1	<u>2.2</u>
Non-Agricultural	0.1	0.5	100.0 (18.9ha)
Urban	<u>0.4</u>	<u>2.0</u>	
Total area of site	19.4	100.0	

- 1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

- 1.7 The agricultural land at this site has been classified as Subgrade 3a (Good quality) to Grade 4 (Poor quality) with substantial areas of Subgrade 3b (Moderate quality). Principal limitations include soil droughtiness, soil wetness and slope. Towards the west and centre of the site, soils were found to be sandy and free draining. Such soils have a comparatively low available water capacity, leading to a significant risk of drought stress affecting plant growth and yield, at this location such that Subgrade 3b is the appropriate classification. On occasion, sandy profiles were very shallow over soft sandstone, especially on the steeper slopes towards the centre of the site. This leads to a restriction on plant rooting depth, further reducing available water in the profile. Consequently, in this area there is a severe risk of drought stress affecting plant growth and yield and Grade 4 is appropriate.
- 1.8 Towards the east of the site, soil wetness becomes the principal limitation. Slowly permeable clay horizons at moderate depths underlying light loamy topsoils and upper subsoils impede drainage insofar as Subgrade 3a is appropriate given the local climate regime. Some freely draining, but more moisture retentive soils are also included in the Subgrade 3a mapping unit.
- 1.9 Towards the extreme west and east of the site and to the immediate west of Pitsham Lane, there are areas affected by a slope limitation, where gradients in the range 7-11° were measured. These are sufficient to compromise the safe and efficient use of agricultural machinery insofar as Subgrade 3b is appropriate, given the degree of limitation on mechanised operations.

2. Climate

- 2.1 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.
- 2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.
- 2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office, 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

Table 2: Climatic Interpolations

Grid Reference	SU878200	SU876203
Altitude, (m, AOD)	35	40
Accumulated Temperature (day degrees C., Jan.-June)	1503	1497
Average Annual Rainfall (mm)	904	896
Field Capacity Days	197	195
Moisture deficit, wheat (mm)	102	102
Moisture deficit, potatoes (mm)	94	94
Overall Climatic Grade	1	1

- 2.4 Unpublished climate reports from the Meteorological Office (Met. Office, 1969) indicate that this area is rather frost prone. No other local climatic factors such as exposure are believed to affect the site. However, climatic and soil factors interact to produce soil wetness and droughtiness limitations of a greater magnitude and consequently frost risk is not considered to affect the final classification.

3. Relief

- 3.1 The site lies between approximately 35 and 40m AOD, within a dry valley, falling from the north of the site to the south east. The land also rises to the east and west of the dry valley axis, before falling to streams at the eastern and western boundaries. Some of the slopes, specifically to the far east and west of the site and to the immediate west of Pitsham Lane, are steep enough to affect the classification. These were measured as being in the range 7-11°.

4. Geology and Soils

- 4.1 The published geological information (BGS, 1972), shows the site to be underlain by Cretaceous Folkestone Beds.
- 4.2 The published soils information (SSEW, 1983), maps the site as being underlain by soils of the Shirrell Heath 2 Association. These are described as, 'well drained sandy soils with a bleached subsurface horizon, sometimes over soft rock, mainly on heaths and often very acid. Well drained sandy and coarse loamy soils on farmland.' (SSEW, 1983). Soils encountered at the site were of a broadly similar type to the above.

5. Agricultural Land Classification

- 5.1 Paragraph 1.5 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.
- 5.2 The location of the soil observation points are shown on the attached sample point map.

Subgrade 3a

- 5.3 Land of good quality is shown across approximately two-fifths of the site in a single unit to the east of 'Pitsham Lane'. Principal limitations to land quality include soil wetness and soil droughtiness. The area affected by soil wetness is towards the east of the unit. Profiles in this area comprise a very slightly stony (2% v/v total hard sandstone fragments) medium sandy loam or loamy medium sand topsoil. This passes to a stoneless or very slightly stony (2% v/v total sandstone) medium sandy loam upper subsoil which may be gleyed. Underlying this, a similarly stony and gleyed moderately structured permeable clay or heavy clay loam occurs. This passes to a moderately structured slowly permeable clay lower subsoil from about 70 - 100cm to depth (120cm). Within this horizon permeable sandy clay loam lenses occur, occasionally up to 15cm thick. Pit 1 (see Appendix III) is typical of these profiles. Within the prevailing local climate, which is comparatively wet on a

regional basis, the depth at which the slowly permeable clay occurs leads to Wetness Class III (see Appendix II) being applied; this equates to Subgrade 3a when the workability status of the light topsoil texture is taken into account. A soil wetness restriction leads to a limitation on land utilisation as well as affecting plant growth and yield. Occasional profiles in this area were of a slightly better quality (Wetness Class II), but were of insufficient quantity and distribution to justify separate mapping.

- 5.4 The area of Subgrade 3a land affected by soil droughtiness is concentrated towards the east and north of the mapped unit. Profiles in this area were variable, commonly comprising a stoneless to very slightly stony (2% v/v total sandstone fragments) loamy medium sand topsoil, passing to a medium sandy loam, loamy medium sand or medium sand upper subsoil, with a similar stone content, to between approximately 40 and 65cm. Beneath this, the soil commonly exhibits wetness characteristics in the form of gleying and becomes either a medium clay loam, a medium sandy loam or a loamy medium sand, which may be very slightly stony (up to 2% v/v sandstone). The lower subsoil horizons are variable, mostly stoneless and gleyed. The textures encountered include, medium sands, medium sandy loams and clays with a significant sand content. The clay horizons were considered to be slowly permeable but occurred at depth (70-90cm), giving Wetness Class I or II, and as such, given the workable topsoil textures, do not affect the final classification. The pit observation, 2p (see Appendix III) is typical of this soil type. However, in the local climate, the overall sandy nature of the soil profiles leads to a reduction in plant available water. Consequently, there is a risk of drought stress affecting plant growth and yield potential, sufficient to give a grading of Subgrade 3a in this area, given the moist local climate.

Subgrade 3b

- 5.5 Land of moderate quality extends over the majority of the site. Principal limitations to land quality include soil droughtiness and slope, with soil droughtiness predominating. Profiles in this area are generally sandy and variable in composition, commonly comprising a stoneless to very slightly stony (up to 2% v/v sandstone fragments) loamy medium sand topsoil. This typically passes to medium sand upper subsoil horizons with a similar stone content. The lower subsoil horizons from between 55 and 95cm comprise medium sand, medium sandy loam, sandy clay loam and on occasion sandy clay textures. Occasional borings were impenetrable, due to the presence of soft sandstone rock at moderate (80-100cm) depths in the profile, into which roots were not observed to penetrate. The overall sandy nature of the profiles leads to a reduction in profile available water which, in the local climate leads to a significant risk of drought stress affecting plant growth and yield. Moisture balance calculations indicate a significant risk of drought and thus Subgrade 3b is appropriately applied.
- 5.6 Towards the extreme east and west of the site and to the immediate west of Pitsham Lane, four areas of land are limited to Subgrade 3b on slope. Gradients in the range 7-11° were measured using an optical reading clinometer. This leads to a restriction

on the safe and efficient use of farm machinery such that Subgrade 3b is appropriate.

Grade 4

- 5.7 Poor quality land is mapped to the west of 'Pitsham Lane', where the land rises steeply. Gradients in the range 7-11° were measured. The soils in this area comprise a loamy medium sand topsoil and upper subsoil, passing to medium sand and then to sandstone around 55cm, into which roots were not observed to penetrate, as seen in the pit observation, 3p. This causes a severe restriction to plant available water and as such Grade 4 is also applied on the basis of a severe soil droughtiness restriction, which affects both plant growth and yield potential.

ADAS Ref: 4203/067/95
MAFF Ref: EL42/228

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1972), Sheet 317, Chichester, 1:63,360. Drift Edition.

MAFF (1988), Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.

Meteorological Office (1969), Unpublished Climate data relating to Sheet 181, 1:63,360.

Meteorological Office (1989), Climatic datasets for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet No. 6, Soils of South-East England, 1:250,000, and Accompanying Legend.

Soil Survey of England and Wales (1984), Soils and their use in South-East England. Bulletin No. 15.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 : Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 : Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a : Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b : Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 : Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map scale permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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

Definition of Soil Wetness Classes

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

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

¹The number of days specified is not necessarily a continuous period.

²'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

Soil Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

Database Printout - Horizon Level Information

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 100 km grid square and 8 figure grid reference.
2. **USE** : Land use at the time of survey. The following abbreviations are used.

ARA : Arable	WHT : Wheat	BAR : Barley
CER : Cereals	OAT : Oats	MZE : Maize
OSR : Oilseed rape	BEN : Field Beans	BRA : Brassicae
POT : Potatoes	SBT : Sugar Beet	FCD : Fodder Crops
LIN : Linseed	FRT : Soft and Top Fruit	FLW : Fallow
PGR : Permanent Pasture	LEY : Ley Grass	RGR : Rough Grazing
SCR : Scrub	CFW : Coniferous Woodland	DCW : Deciduous Wood
HTH : Heathland	BOG : Bog or Marsh	FLW : Fallow
PLO : Ploughed	SAS : Set aside	OTH : Other
HRT : Horticultural Crops		
3. **GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.
5. **AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
6. **MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)
7. **DRT** : Best grade according to soil droughtiness.
8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

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

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

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

Soil Pits and Auger Borings

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

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

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F :	Fine (more than 66% of the sand less than 0.2mm)
M :	Medium (less than 66% fine sand and less than 33% coarse sand)
C :	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M** : Medium (<27% clay) **H** : Heavy (27-35% clay)

2. **MOTTLE COL** : Mottle colour using Munsell notation.
3. **MOTTLE ABUN** : Mottle abundance, expressed as a percentage of the matrix or surface described.

F : few <2% **C** : common 2-20% **M** : many 20-40% **VM** : very many 40% +

4. **MOTTLE CONT** : Mottle contrast

F : faint - indistinct mottles, evident only on close inspection
D : distinct - mottles are readily seen
P : prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL** : Ped face colour using Munsell notation.
6. **GLEYS** : If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.
7. **STONE LITH** : Stone Lithology - One of the following is used.

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

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

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

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

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

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

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

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

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

11. **POR** : Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL** : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC** : If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations

APW : available water capacity (in mm) adjusted for wheat

APP : available water capacity (in mm) adjusted for potatoes

MBW : moisture balance, wheat

MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE F Pit Number : 1P

Grid Reference: SU87902020 Average Annual Rainfall : 904 mm
 Accumulated Temperature : 1503 degree days
 Field Capacity Level : 197 days
 Land Use : Permanent Grass
 Slope and Aspect : 1 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	LMS	10YR33 00	0	2	HR		WKCSAB	FR		
26- 44	MSL	10YR54 56	0	2	HR		MDCSAB	FR	M	
44- 68	C	10YR63 00	0	2	HR	M	MDVCSB	FR	M	
68- 94	C	25Y 62 00	0	2	HR	M	MDCAB	FR	M	
94-110	SCL	25Y 62 00	0	2	HR	M	MDCSAB	FR	M	
110-120	C	25Y 62 00	0	2	HR	M				P

Wetness Grade : 3A Wetness Class : III
 Gleying : 44 cm
 SPL : 68 cm

Drought Grade : 2 APW : 120mm MBW : 18 mm
 APP : 94 mm MBP : 0 mm

FINAL ALC GRADE : 3A₁
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE F Pit Number : 2P

Grid Reference: SUB7802020 Average Annual Rainfall : 904 mm
 Accumulated Temperature : 1503 degree days
 Field Capacity Level : 197 days
 Land Use : Permanent Grass
 Slope and Aspect : 3 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH.	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	LMS	25Y 21 00	0	2	HR		WKCSAB	FR		
29- 44	LMS	75YR42 00	0	0			MDCAB	FR	G	
44- 62	MSL	10YR62 52	0	0		C	MDCSAB	FR	M	
62- 83	MS	75YR42 21	0	0		C	WKCSAB	VF	M	
83-100	C	25Y 71 62	0	0		M	MASSIV	VM	P	
100-120	MS	10YR62 00	0	0		M	SINGGR	VF	M	

Wetness Grade : 1 Wetness Class : I
 Gleying : 44 cm
 SPL : 83 cm

Drought Grade : 3A APW : 95 mm MBW : -7 mm
 APP : 75 mm MBP : -19 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE F Pit Number : 3P

Grid Reference: SUB7602020 Average Annual Rainfall : 904 mm
 Accumulated Temperature : 1503 degree days
 Field Capacity Level : 197 days
 Land Use :
 Slope and Aspect : 8 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 17	LMS	10YR31 00	0	2	HR			FR		
17- 30	LMS	05Y 21 00	0	0			WKCSAB	FM	M	
30- 48	MS	75YR34 31	0	0		C		FM	M	
48- 55	MSST	10YR66 00	0	0					M	

Wetness Grade : 3B Wetness Class : IV
 Gleying : 30 cm
 SPL : 48 cm

Drought Grade : 4 APW : 38 mm MBW : -64 mm
 APP : 39 mm MBP : -55 mm

FINAL ALC GRADE : 4
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--				-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRONT	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SU87602050	BS NW	4			1	1	68	-34	55	-39	3B			DR	3B	
1P	SU87902020	PGR E	1	44	68	3	3A	120	18	94	0	2			WE	3A	PIT@13 TO 120
2	SU87602040	BS		70		1	1	70	-32	53	-41	3B			DR	3B	
2P	SU87802020	PGR SW	3	44	83	1	1	95	-7	75	-19	3A			DR	3A	PIT@12 TO 120
3	SU87702040	BS N	2	45	45	3	3A	81	-21	82	-12	3B			DR	3B	IMP SANDST 80
3P	SU87602020	BS W	8	30	48	4	3B	38	-64	39	-55	4			DR	4	PIT@10 IMP 55
4	SU87802040	BS S	4			1	1	70	-32	53	-41	3B			DR	3B	
5	SU87602030	BS W	1	75		1	1	104	2	59	-35	3B			DR	3B	
6	SU87702030	PGR S	2	38		1	1	84	-18	68	-26	3A			DR	3A	VARIABLE SUBS
7	SU87802030	PGR E	2	50		1	1	112	10	65	-29	3A			DR	3A	
8	SU87902030	PGR E	3	25	100	2	2	144	42	110	16	1			WE	2	
9	SU88002030	BS S		30		2	2	146	44	91	-3	2			WD	2	
10	SU87602020	BS E	8	35	55	3	3A	44	-58	45	-49	4			DR	4	IMP SANDST 60
11	SU87702020	PGR N	2	65		1	1	101	-7	75	-19	3A			DR	3A	CLAY LENS 65
12	SU87802020	PGR SW	3	60	90	1	1	104	2	70	-24	3A			DR	3A	SANDY BANDS
13	SU87902020	PGR E	1	45	70	3	3A	143	41	109	15	1			WE	3A	Q SPL 70
14	SU88002020	BS E	4	90		1	1	60	-42	58	-36	3B			DR	3B	IMP SANDST 100
15	SU87702010	PGR N	2	50	95	1	1	95	-7	77	-17	3A			DR	3A	WET FROM 70
16	SU87802010	PGR S	4	55		1	1	87	-15	53	-41	3B			DR	3B	
17	SU87902010	PGR E	3	80		1	1	73	-29	53	-41	3B			DR	3B	IMP SANDST 100
18	SU88002010	PGR N	2	85		1	1	73	-29	56	-38	3B			DR	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED		---STONES---			STRUCT/	SUBS	SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH				
1	0-27	lms	10YR32 42						0	0	HR	1			
	27-45	lms	10YR58 54						0	0	HR	20	G		
	45-70	ms	10YR58 00						0	0	HR	10	M		
	70-120	ms	10YR58 00						0	0	HR	20	M		
1P	0-26	lms	10YR33 00						0	0	HR	2	WKCSAB	FR	
	26-44	msl	10YR54 56						0	0	HR	2	MDCSAB	FR M	
	44-68	c	10YR63 00 10YR68 00 M					Y	0	0	HR	2	MDVCSB	FR M	
	68-94	c	25Y 62 00 75YR68 00 M					Y	0	0	HR	2	MDCAB	FR M	Y
	94-110	sc1	25Y 62 00 75YR68 00 M					Y	0	0	HR	2	MDCSAB	FR M	Y
	110-120	c	25Y 62 00 75YR68 00 M					Y	0	0	HR	2		P	Y
2	0-29	lms	10YR42 00						0	0		0			
	29-70	ms	10YR64 00						0	0		0	M		
	70-120	ms	10YR64 00 10YR56 00 C					00MNOO	00	Y	0	0	HR	2	M
2P	0-29	lms	25Y 21 00						0	0	HR	2	WKCSAB	FR	
	29-44	lms	75YR42 00						0	0		0	MDCAB	FR G	
	44-62	msl	10YR62 52 10YR66 00 C					Y	0	0		0	MDCSAB	FR M	
	62-83	ms	75YR42 21 10YR66 00 C					Y	0	0		0	WKCSAB	VF M	
	83-100	c	25Y 71 62 75YR66 68 M					Y	0	0		0	MASSIV	VM P	Y
	100-120	ms	10YR62 00 10YR66 00 M					Y	0	0		0	SINGGR	VF M	Y
3	0-30	lms	10YR32 42						0	0		0			
	30-45	lms	10YR42 00						0	0	HR	2	G		
	45-65	sc	10YR53 00 75YR56 00 M					Y	0	0	HR	2	M		Y
	65-80	sc1	25Y 63 00 75YR56 00 M					Y	0	0	HR	10	M		IMP SANDSTONE 80
3P	0-17	lms	10YR31 00						0	0	HR	2	FR		
	17-30	lms	05Y 21 00						0	0		0	WKCSAB	FM M	Y
	30-48	ms	75YR34 31 75YR58 00 C					Y	0	0		0	FM M	Y	
	48-55	msst	10YR66 00					Y	0	0		0	M		IMP SANDSTONE 55
4	0-30	lms	10YR31 00						0	0	HR	2			
	30-95	ms	10YR51 00						0	0		0	M		
	95-120	ms	75YR31 00						0	0		0	M		
5	0-30	lms	10YR31 00						0	0	HR	2			
	30-45	lms	10YR31 00 10YR46 00 F						0	0		0	G		
	45-75	ms	10YR52 00						0	0		0	M		
	75-90	msl	10YR53 00 10YR58 00 M					Y	0	0		0	M		
	90-120	sc1	05Y 63 00 10YR68 00 M					Y	0	0		0	M		
6	0-25	lms	25Y 21 00						0	0	HR	1			
	25-38	lms	75YR42 00						0	0	HR	2	G		
	38-50	mc1	10YR62 52 75YR68 00 M					Y	0	0	HR	2	M		
	50-75	ms	75YR42 00						0	0	HR	2	M		
	75-120	ms	10YR63 72 75YR68 00 M					Y	0	0	HR	2	M		

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	POR	IMP
7	0-25	lms	10YR21 00					0	0	0-						
	25-50	ms	25Y 51 00					0	0	0		M				
	50-60	lms	10YR21 41	10YR66	00	C		Y	0	0		G				
	60-90	msl	10YR62 00	10YR58	00	M		Y	0	0		M				
	90-120	msl	10YR66 00					Y	0	0	HR	5	M			
8	0-25	msl	10YR42 00					0	0	HR	2					
	25-60	msl	10YR53 00	10YR56	00	C		Y	0	0		M				
	60-100	hcl	10YR63 00	10YR68	00	M		Y	0	0		M				
	100-120	c	05Y 61 00	10YR68	00	M		Y	0	0		0	P		Y	
9	0-30	lms	10YR31 00					0	0	HR	2					
	30-45	msl	10YR42 00	10YR56	00	C		Y	0	0		M				
	45-75	msl	10YR52 00	10YR68	00	M		Y	0	0		M				
	75-100	fszl	25Y 62 00	10YR68	00	M		Y	0	0		M				
	100-120	sc1	10YR52 00	10YR68	00	M		Y	0	0		0	M			
10	0-25	lms	10YR31 00					0	0	HR	2					
	25-35	lms	10YR21 00					0	0	0		M				
	35-55	ms	10YR42 00	10YR46	00	C		Y	0	0		M				
	55-60	msst	10YR76 00					Y	0	0		0	M		IMP SANDSTONE 60	
11	0-29	lms	25Y 21 00					0	0	HR	2					
	29-45	ms	25Y 64 00					0	0	0		M				
	45-65	msl	75YR32 00					0	0	HR	2		M			
	65-90	msl	25Y 62 72	75YR68	00	M		Y	0	0	HR	2		M		
	90-120	ms	25Y 62 72					Y	0	0	HR	2		M		
12	0-25	lms	10YR21 00					0	0	HR	2					
	25-35	ms	25Y 41 00					0	0	0		M				
	35-60	lms	75YR31 00					0	0	0		G				
	60-70	msl	25Y 51 00	10YR68	00	M		Y	0	0		0	M			
	70-80	c	25Y 71 00	10YR68	00	M		Y	0	0		0	M			
	80-90	msl	25Y 21 00	10YR46	00	C		Y	0	0		0	M			
	90-120	c	25Y 71 00	10YR68	00	M		Y	0	0		0	P		Y	
13	0-30	msl	10YR42 00					0	0	HR	2					
	30-45	msl	10YR54 00					0	0	HR	2		M			
	45-70	sc1	10YR53 00	75YR68	00	M		Y	0	0	HR	2		M		
	70-95	c	10YR53 00	75YR68	00	M		Y	0	0	HR	2		M		Y
	95-120	sc1	10YR53 00	75YR68	00	M		Y	0	0	HR	2		M		
14	0-30	lms	10YR31 21					0	0	HR	2					
	30-60	lms	10YR31 21					0	0	0		M				
	60-70	ms	10YR61 00					0	0	0		M				
	70-90	msst	10YR76 00					0	0	0		M				
	90-100	msst	10YR31 00	10YR46	00	C		Y	0	0		0	M		IMP SANDSTONE 100	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
15	0-30	lms	25Y 21 00						0	0	0							
	30-40	lms	75YR32 00						0	0	0		G					
	40-50	lms	75YR42 00						0	0	0		G					
	50-65	mc1	10YR62 00	75YR68 00	M				Y	0	0	0		M				
	65-95	ms	10YR62 72	75YR66 00	M				Y	0	0	0		M				
	95-120	c	25Y 61 00	75YR66 00	M				Y	0	0	0		P			Y	
16	0-30	lms	10YR31 00						0	0	HR	2						
	30-55	ms	25Y 41 00						0	0	0		M					
	55-95	ms	25Y 42 00	10YR58 00	M				Y	0	0	0		M				
	95-120	ms1	25Y 42 00	10YR58 00	C				Y	0	0	0		M				
17	0-30	lms	10YR32 00						0	0	HR	2						
	30-40	ms	25Y 64 00						0	0	HR	2		M				
	40-80	ms	10YR31 00						0	0	HR	2		M				
	80-95	ms1	25Y 62 52	75YR68 00	M				Y	0	0	HR	2		M			
	95-100	c	25Y 62 52						Y	0	0	HR	5		P			
18	0-30	lms	10YR21 31						0	0	HR	2						
	30-50	lms	10YR21 31						0	0	0		M					
	50-85	ms	05Y 41 00						0	0	0		M					
	85-120	ms	25Y 51 00	10YR56 00	C				Y	0	0	0		M				

IMP STONE 100