

A1
BASINGSTOKE & DEANE BOROUGH
LOCAL PLAN
SITE 19B : LAND SOUTH WEST
OF TADLEY
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JULY 1993

**BASINGSTOKE & DEANE BOROUGH LOCAL PLAN
SITE 19B : LAND SOUTH WEST OF TADLEY
AGRICULTURAL LAND CLASSIFICATION REPORT**

1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality of 22 sites around Basingstoke in Hampshire. The work forms part of MAFF's statutory input to the preparation of the Basingstoke and Deane Borough Local Plan.

1.2 Approximately 63 hectares of land relating to site 19B : Land South West of Tadley was surveyed in July 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 61 soil auger borings and 3 soil inspection pits were described in accordance with 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 longterm limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the landuse on the site was permanent grassland and maize.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for the site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	22.5	35.8	38.4
3b	36.1	57.4	<u>61.6</u>
Non agricultural	1.2	1.9	100% (58.6 ha)
Woodland	2.6	4.1	
Urban	<u>0.5</u>	<u>0.8</u>	
Total area of site	62.9	100%	

1.6 Appendix 1 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 Good (subgrade 3a) and moderate (subgrade 3b) quality land is mapped over the site, with soil wetness being the main limitation. Land classified as subgrade 3b is gleyed and slowly permeable at shallow depths while subgrade 3a land is slightly better drained , being slowly permeable deeper in the profile.

2.0 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 the overall climatic limitation are annual average 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.

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil properties to affect the risk of soil wetness and droughtiness limitations.

Table 2 : Climatic Interpolation

Grid Reference :	SU 585 612
Altitude (m) :	95
Accumulated Temperature (days) :	1423
Average Annual Rainfall (mm) :	750
Field Capacity (days) :	159
Moisture Deficit, Wheat (mm) :	100
Moisture Deficit, Potatoes (mm) :	91
Overall Climatic Grade :	1

3.0 Relief

3.1 The site lies at an altitude of approximately 90-100 metres, land sloping very gently south to the point of lowest altitude. Nowhere on the site does relief or gradient affect agricultural land quality.

4.0 Geology and Soil

4.1 The relevant geological sheets for the site, Sheet 284 (BGS, 1981) and Sheet 268 (BGS, 1971) shows the underlying geology to be mainly Tertiary Bagshot Beds with a small area of Recent and Pleistocene Plateau Gravel to the north east.

4.2 The published soils information for the area, Sheet 6 (SSEW, 1983) shows the majority of the site to comprise soils of the Burlesdon association which reflects the Bagshot Beds geology - "Deep fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging associated with deep coarse loamy soils variably affected by groundwater. Some slowly permeable seasonally waterlogged loamy over clayey soils..." (SSEW, 1983). Reflecting the Plateau Gravel geology is mapped the Sonning 2 association - "Well drained flinty coarse loamy soils. Associated with slowly permeable seasonally waterlogged fine loamy over clayey soils and coarse loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging" (SSEW, 1983). A detailed inspection of soils on the site revealed the presence of slowly permeable fine loamy over clayey soils and gravelly fine loamy soils with no slowly permeable subsoils.

5.0 Agricultural Land Classification

5.1 Table 1 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 Two areas of land to the south and west of the site have been classified as subgrade 3a. Profiles typically comprise topsoils of medium clay loam containing 0-10% total flints by volume over upper subsoils of medium and heavy clay loam containing similar stone volumes. Lower subsoils consist of poorly structured slowly permeable clay horizons from a depth of 44-65 cm in the profile. Consequently soils suffer a moderate wetness limitation and are assigned to a wetness class of III. This combined with a medium topsoil texture and the local climate results in a land classification of subgrade 3a. The passage of water through these soils is impeded and this reduces the period in which the land can be effectively cultivated or grazed and also affects crop development and growth.

Subgrade 3b

5.4 Land classified as subgrade 3b is mapped over the majority of the site and is limited by wetness and droughtiness. Land limited by soil droughtiness coincides with the Plateau Gravel geology to the north east. Auger borings proved to be impenetrable beyond the topsoil but soil inspection pit 3 is typical of these soils. From this pit profiles were found to comprise topsoils of medium clay loam containing 6-25% total flints by volume of which 8% > 2cm in diameter. Subsoils consist of medium clay loam containing 32-40% total flints with pit observations revealing an effective rooting depth of only 60 cm in the profile. Soils do not suffer a wetness limitation and are assigned to wetness class of I. However, due to the moderately to very stony subsoils and restricted rooting depth soils suffer a significant droughtiness limitation. The factors described above combined with climatic factors reduce the profile available for crops such that land can be classified no higher than subgrade 3b.

5.5 The remainder of the site is limited to subgrade 3b due to a significant soil wetness limitation. Profiles typically comprise topsoils of medium clay loam, occasionally heavy clay loam containing 0-5% total flints by volume over upper subsoils of poorly structured slowly permeable clay. These slowly permeable horizons begin from a depth of 15-40 cm in the profile and soils are assigned to a wetness class of IV accordingly. This combined with medium topsoil textures and climatic factors limits land to subgrade 3b. The movement of water through these soils is more severely restricted than that of subgrade 3a soils and this further reduces the period of effective cultivation, grazing by livestock and the success of crop growth and development.

5.6 Land classified as non agricultural includes an overgrown area of trees and bushes and houses with large gardens.

5.7 Land classified as urban comprises a metalled road.

ADAS REFERENCE : 1501/035/93
MAFF REFERENCE : EL 15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on the 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.

Grade 3 : Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops, 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.

Sub-grade 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.

Sub-grade 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 very 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 : 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/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial 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

REFERENCES

- * BRITISH GEOLOGICAL SURVEY (1971), Sheet No.268, Reading, 1:63,360 scale.
(1981), Sheet No.284, Basingstoke, 1:50,000 scale.
- * MAFF (1988), Agricultural Land Classification of England And Wales : Revised guidelines and criteria for grading the quality of agricultural land.
- * METEOROLOGICAL OFFICE (1989), Climatological Data for Agricultural Land Classification.
- * SOIL SURVEY OF ENGLAND AND WALES (1983), Sheet No.6, "Soils of South East England", 1:250,000 scale and accompanying legend.

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

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 database. This has commonly used notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 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 **HRT** : Horticultural Crops **PGR** : Permanent Pasture **LEY** : Ley Grass **RGR** : Rough Grazing
SCR : Scrub **CFW** : Coniferous Woodland **DCW** : Deciduous Woodland **HTH** : Heathland **BOG** : Bog or Marsh
FLW : Fallow **PLO** : Ploughed **SAS** : Set aside **OTH** : Other

3. **GRDNT** : Gradient as measured by a hand-held optical clinometer.

4. **GLEYSPL** : Depth in cm to gleying or slowly permeable layers.

5. **AP (WHEAT/POTS)** : Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS)** : Moisture Balance.

7. **DRT** : Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, an entry of 'Y' will be entered in the relevant column.

MREL : Microrelief limitation **FLOOD** : Flood risk **EROSN** : Soil erosion risk **EXP** : Exposure limitation **FROST** : Frost
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** : Soil Erosion Risk **WD** : Combined 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
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 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

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

6. STONE LITH : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone

SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone

FSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk

GH : gravel with non-porous (hard) stones GS : gravel with porous (soft) stones

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

7. STRUCT : the degree of development, size and shape of soil pedes are described using the following notation:

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

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

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

8. 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

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G : good M : moderate P : poor

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

11. IMP : If the profile is impenetrable a 'Y' will appear in this column at the appropriate horizon.

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

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

14. 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 : LAND SW OF TAQLEY, HANTS Pit Number : 1P

Grid Reference: SU58906110 Average Annual Rainfall : 750 mm
 Accumulated Temperature : 1423 degree days
 Field Capacity Level : 159 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 20	MCL	25Y 62 00	0	2	C	
20- 44	HCL	25Y 62 00	0	0	M	MDCSAB
44- 83	C	25Y 61 00	0	0	M	MDCAB
83-120	C	25Y 61 00	0	0	M	

Wetness Grade : 3A Wetness Class : III
 Gleying : 0 cm
 SPL : 044 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : LAND SW OF TADLEY, HANTS Pit Number : 2P

Grid Reference: SU58606130 Average Annual Rainfall : 750 mm
 Accumulated Temperature : 1423 degree days
 Field Capacity Level : 159 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MCL	10YR42 00	0	3	C	
30- 60	C	05Y 72 00	0	0	M	MDVCPR

Wetness Grade : 3B Wetness Class : IV
 Gleying : 0 cm
 SPL : 030 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : LAND SW OF TADLEY, HANTS Pit Number : 3P

Grid Reference: SU58546174 Average Annual Rainfall : 750 mm
Accumulated Temperature : 1423 degree days
Field Capacity Level : 159 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR43 00	8	25		
25- 55	MCL	10YR43 00	0	32		
55- 60	MCL	10YR44 00	0	40		

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 3B APW : 069mm MBW : -31 mm
APP : 073mm MBP : -18 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SU58206190	MZE	065	065	2	2		0	0				WE	2	
1P	SU58906110	PGR	0	044	3	3A		0	0				WE	3A	
2	SU58406190	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
2P	SU58606130	PGR	0	030	4	3B		0	0				WE	3B	
3	SU58506190	PGR	030	030	4	3B		0	0				WE	3B	
3P	SU58546174	PGR			1	1	069	-31	073	-18	3B		DR	3B	ROOTS TO 60
4	SU58606190	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
5	SU58206180	MZE	035	077	2	2		0	0				WE	2	
7	SU58406180	PGR	025		2	2	076	-24	076	-15	3B		DR	3B	IMP50Q3ADR
8	SU58506180	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
9	SU58606180	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
10	SU58206170	PGR			1	1	066	-34	066	-25	3B		DR	3B	IMP40ASPIT3
11	SU58306170	PGR SE	02	037	037	4	3B		0	0			WE	3B	
12	SU58406170	PGR SE	02	045	045	3	3A		0	0			WE	3A	
13	SU58506170	PGR	0	015	4	3B		0	0				WE	3B	IMP60
14	SU58606170	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
15	SU58306160	PGR S	02	0	030	4	3B		0	0			WE	3B	
16	SU58406160	PGR S	02	0	040	4	3B		0	0			WE	3B	
17	SU58506160	PGR	0	075	2	2		0	0				WE	2	
18	SU58606160	PGR			1	1	034	-66	034	-57	4		DR	3B	IMP25ASPIT3
19	SU58306150	PGR	026	050	3	3A		0	0				WE	3A	
20	SU58406150	PGR	030	055	3	3A		0	0				WE	3A	
21	SU58506150	PGR	0	040	4	3B		0	0				WE	3B	
23	SU58306140	PGR	0		2	2	054	-46	054	-37	3B		DR	3B	IMP30Q3A
24	SU58406140	PGR	030		2	2	122	22	113	22	2		WE	2	IMP 90
25	SU58506140	PGR	0	050	3	3A		0	0				WE	3A	
26	SU58606140	PGR	0	055	3	3A		0	0				WE	3A	
27	SU58706140	PGR	0	045	3	3A		0	0				WE	3A	
28	SU58306130	PGR	026		2	2	063	-37	063	-28	3B		DR	3B	IMP40Q3A
29	SU58406130	PGR	0	040	4	3B		0	0				WE	3B	
30	SU58506130	PGR	026		2	2	075	-25	075	-16	3B		DR	3B	IMP47Q3A
31	SU58606130	PGR	0	035	4	3B		0	0				WE	3B	
32	SU58706130	PGR	026	037	4	3B		0	0				WE	3B	
33	SU58806130	PGR	030	077	2	2		0	0				WE	2	
35	SU58506120	PGR	030	045	3	3A	123	23	113	22	2		WE	2	IMP 90
36	SU58606120	PGR	0	050	3	3A		0	0				WE	3A	
37	SU58706120	PGR	0	030	4	3B		0	0				WE	3B	
38	SU58806120	PGR	025	040	4	3B		0	0				WE	3B	
39	SU58906120	PGR	035	035	4	3B		0	0				WE	3B	
40	SU59006120	PGR	030	030	4	3B		0	0				WE	3B	
41	SU59106120	PGR	030	040	4	3B		0	0				WE	3B	
42	SU59206120	PGR	028	028	4	3B		0	0				WE	3B	

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
43	SU58406110	PGR	0	045	3	3A		0	0					WE	3A
44	SU58506110	PGR	0	035	4	3B		0	0					WE	3B
45	SU58606110	PGR	0	035	4	3B		0	0					WE	3B
46	SU58706110	PGR	0	036	4	3B		0	0					WE	3B
48	SU58906110	PGR	0	045	3	3A		0	0					WE	3A
49	SU59006110	PGR	0	047	3	3A		0	0					WE	3A
50	SU59106110	PGR	0	055	3	3A		0	0					WE	3A
51	SU59206110	PGR	0	035	4	3B		0	0					WE	3B
52	SU58406100	PGR	035	050	3	3A		0	0					WE	3A
53	SU58506100	PGR	045	065	2	2	118	18	116	25	2			WE	2 IMP 90
54	SU58606100	PGR	045	055	3	3A		0	0					WE	3A
55	SU58706100	PGR W	01	0	030	4	3B		0	0				WE	3B
56	SU58806100	PGR W	01	0	030	4	3B		0	0				WE	3B
57	SU58906100	PGR	0	030	4	3B		0	0					WE	3B
58	SU59006100	PGR	045	045	3	3A		0	0					WE	3A
59	SU59106100	PGR	0	030	4	3B		0	0					WE	3B
60	SU58806090	PGR	020	047	3	3A		0	0					WE	3A
61	SU58906090	PGR	0	030	4	3B		0	0					WE	3B
62	SU59006090	PGR W	01	0	045	3	3A		0	0				WE	3A
63	SU59106090	PGR W	01	0	2	2		0	0					WE	2
64	SU59006090	PGR W	01	0	050	3	3A		0	0				WE	3A
65	SU59106090	PGR	0	045	3	3A		0	0					WE	3A

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR		
1	0-35	mc1	10YR42 00					0	0	HR	2					
	35-65	hc1	10YR56 00					0	0		0		M			
	65-120	c	10YR64 00 75YR58 00 M					Y	0	0	0		P		Y	
1P	0-20	mc1	25Y 62 00 10YR66 00 C					Y	0	0	HR	2				
	20-44	hc1	25Y 62 00 10YR58 00 M					Y	0	0	0	MDCSAB	FR	M	Y	
	44-83	c	25Y 61 00 75YR58 00 M					Y	0	0	0	MDCAB	FM	P	Y	Y
	83-120	c	25Y 61 00 75YR58 00 M					Y	0	0	0		P		Y	Y
2	0-25	mc1	10YR43 00					0	0	HR	25					
2P	0-30	mc1	10YR42 00 10YR56 00 C					Y	0	0	HR	3				
	30-60	c	05Y 72 00 75YR58 00 M					Y	0	0	0	MDVCPR	FM	P	Y	Y
3	0-30	hc1	10YR31 00					0	0		0					
	30-70	c	10YR74 58 10YR58 62 C					Y	0	0	HR	5		P		Y
3P	0-25	mc1	10YR43 00					8	0	HR	25					
	25-55	mc1	10YR43 00					0	0	HR	32		M			
	55-60	mc1	10YR44 00					0	0	HR	40		M			
4	0-25	mc1	10YR43 00					0	0	HR	25					
5	0-35	mc1	10YR42 00 10YR56 00 F					0	0	HR	3					
	35-77	sc1	25Y 63 64 75YR58 00 C					Y	0	0	0		M			
	77-120	c	25Y 63 00 75YR58 00 M					Y	0	0	0		P		Y	
7	0-25	hc1	10YR43 00					0	0	HR	8					
	25-50	c	10YR52 00 10YR58 62 C					Y	0	0	HR	15		M		
8	0-25	mc1	10YR43 00					0	0	HR	25					
9	0-25	mc1	10YR43 00					0	0	HR	25					
10	0-35	mc1	10YR42 00 10YR56 00 F					3	0	HR	6					
	35-40	sc1	10YR54 00 75YR58 00 M					0	0	HR	10		M			
11	0-26	mc1	10YR42 00					0	0	HR	5					
	26-37	mc1	10YR53 00 10YR56 00 F					0	0	HR	2		M			
	37-60	c	25Y 63 00 75YR58 00 M					Y	0	0	0		P		Y	
12	0-30	mc1	10YR53 00 10YR56 00 F					0	0	HR	5					
	30-45	mc1	10YR54 00 75YR58 00 M					0	0	HR	2		M			
	45-60	c	25Y 63 00 75YR58 00 M					Y	0	0	0		P		Y	
13	0-15	mc1	10YR42 00 10YR58 62 C					Y	0	0	0					
	15-60	c	10YR63 00 10YR58 61 C					Y	0	0	HR	12		P		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
14	0-25	mc1	10YR43 00						0	0	HR	25					
15	0-25	mc1	10YR53 00 10YR56 00 C						Y	0	0	HR	3				
	25-30	c	25Y 52 00 75YR56 00 C						Y	0	0		0		M		
	30-60	c	05Y 62 00 75YR58 00 M						Y	0	0		0		P		Y
16	0-35	mc1	10YR53 00 75YR56 00 C						Y	0	0	HR	2				
	35-40	c	25Y 62 00 75YR58 00 M						Y	0	0		0		M		
	40-60	c	25Y 62 63 75YR58 00 M						Y	0	0		0		P		Y
17	0-35	mc1	10YR53 00 10YR56 00 C						Y	0	0	HR	5				
	35-75	sc1	10YR54 00 75YR56 58 C						Y	0	0		0		M		
	75-120	c	25Y 62 00 75YR58 00 M						Y	0	0		0		P		Y
18	0-25	mc1	10YR43 00							0	0	HR	25				
19	0-26	mc1	10YR53 00 10YR56 00 F							0	0		0				
	26-45	mc1	10YR64 00 75YR58 00 C						Y	0	0		0		M		
	45-50	c	25Y 63 00 75YR58 00 C						Y	0	0		0		M		
	50-120	c	25Y 72 62 75YR58 56 M				00MN00 00	Y	0	0		0			P		Y
20	0-30	mc1	10YR53 00							0	0		0				
	30-45	mc1	10YR64 00 75YR58 00 C						Y	0	0		0		M		
	45-55	hc1	25Y 63 00 75YR58 00 C						Y	0	0		0		M		
	55-120	c	25Y 63 00 75YR58 00 M						Y	0	0		0		P		Y
21	0-25	mc1	10YR52 00 10YR58 62 C				00MN00 00	Y	0	0		0					
	25-40	hc1	10YR52 00 10YR58 71 C				00MN00 00	Y	0	0		0			M		
	40-90	c	10YR63 00 10YR58 62 C				00MN00 00	Y	0	0		0			P		Y
23	0-30	mc1	10YR52 00 10YR58 61 C						Y	0	0		0				
24	0-30	mc1	10YR42 00							0	0		0				
	30-40	hc1	10YR42 00 10YR58 62 C						Y	0	0		0		M		
	40-90	sc1	25Y 64 00 10YR58 71 C						Y	0	0	HR	5		M		
25	0-30	mc1	10YR42 00 10YR58 61 C						Y	0	0		0				
	30-50	hc1	25Y 64 00 10YR58 61 C						Y	0	0		0		M		
	50-90	c	10YR63 00 10YR58 61 C				00MN00 00	Y	0	0		0			P		Y
26	0-30	mc1	10YR52 00 10YR58 61 C						Y	0	0		0				
	30-55	hc1	10YR42 00 10YR58 61 C						Y	0	0		0		M		
	55-90	c	10YR63 00 10YR58 62 C						Y	0	0		0		P		Y
27	0-30	mc1	10YR62 00 10YR58 61 C						Y	0	0		0				
	30-45	mc1	10YR63 00 10YR58 81 C						Y	0	0		0		M		
	45-100	c	10YR63 00 10YR58 72 C						Y	0	0		0		P		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	CONSIST	STR	POR	IMP	SPL
28	0-26	mc1	10YR42 00						0	0	HR	10						
	26-40	hc1	25Y 63 00	75YR58	00	C			Y	0	0	HR	10		M			
29	0-28	mc1	10YR42 00	10YR56	00	C			Y	0	0		0					
	28-40	c	25Y 62 63	75YR58	00	C			Y	0	0		0		M			
	40-60	c	25Y 62 63	75YR58	00	M			Y	0	0		0		P		Y	
30	0-26	mc1	10YR42 00	10YR56	00	F			0	0	HR	3						
	26-47	sc1	25Y 63 00	75YR58	00	C			Y	0	0	HR	8		M			
31	0-35	mc1	10YR42 00	10YR56	00	C			Y	0	0	HR	2					
	35-60	c	05Y 72 00	75YR58	00	M			Y	0	0		0		P		Y	
32	0-26	mc1	25Y 42 00	10YR56	00	F			0	0		0						
	26-37	hc1	25Y 63 00	75YR56	58	C			Y	0	0		0		M			
	37-60	c	25Y 62 63	75YR58	00	M			Y	0	0		0		P		Y	
33	0-30	mc1	10YR42 00						0	0		0						
	30-38	mc1	10YR53 00	75YR58	00	C			Y	0	0		0		M			
	38-45	sc1	25Y 63 00	75YR58	00	C			Y	0	0		0		M			
	45-77	hc1	25Y 62 00	75YR58	00	C			Y	0	0		0		M			
	77-120	c	25Y 62 00	75YR58	00	M	00MN00	00	Y	0	0		0		P		Y	
35	0-30	mc1	10YR42 00	10YR58	00	F			0	0		0						
	30-45	mc1	10YR42 00	10YR58	71	C			Y	0	0	HR	10		M			
	45-90	sc1	10YR72 00	10YR58	71	C			Y	0	0		0		M			
36	0-35	mc1	10YR42 00	10YR58	71	C			Y	0	0		0					
	35-50	hc1	10YR52 00	10YR58	71	C			Y	0	0		0		M			
	50-100	c	10YR64 00	10YR58	61	C			Y	0	0		0		P		Y	
37	0-30	mc1	10YR42 00	10YR58	61	C			Y	0	0		0					
	30-90	c	10YR63 00	10YR58	71	C			Y	0	0		0		P		Y	
38	0-25	mc1	10YR52 00						0	0		0						
	25-40	hc1	10YR52 00	10YR58	71	C			Y	0	0		0		M			
	40-90	c	10YR63 00	10YR58	71	C			Y	0	0		0		P		Y	
39	0-35	mc1	10YR42 00						0	0	HR	3						
	35-60	c	25Y 52 00	10YR56	00	C	00MN00	00	Y	0	0		0		P		Y	
	60-90	sc	25Y 52 00	75YR58	00	M			Y	0	0	HR	5		P		Y	
	90-120	sc	10YR56 00						0	0	HR	25		M		Y		
40	0-30	mc1	10YR42 00						0	0	HR	2						
	30-80	c	05Y 62 00	10YR58	00	M			Y	0	0		0		P		Y	
	80-120	c	25Y 52 00	75YR58	00	M			Y	0	0	HR	2		P		Y	
41	0-30	mc1	10YR42 00						0	0	HR	2						
	30-40	hc1	25Y 73 00	10YR66	00	C			Y	0	0		0		M			
	40-80	c	25Y 62 00	75YR58	00	M			Y	0	0		0		P		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
42	0-28	mc1	10YR42 00						0	0	HR	3					
	28-70	c	25Y 62 00	75YR58	00	M		Y	0	0		0	P				Y
43	0-28	mc1	10YR42 00	75YR56	00	C		Y	0	0	HR	1					
	28-35	mc1	25Y 42 00	75YR56	00	C		Y	0	0	HR	5	M				
	35-45	sc1	25Y 63 00	75YR58	00	C		Y	0	0	HR	3	M				
	45-70	c	25Y 62 63	75YR58	00	M	00MN00	00	Y	0	0	0	P				Y
44	0-28	mc1	25Y 42 00	75YR56	00	C		Y	0	0	HR	1					
	28-35	hc1	25Y 63 00	75YR58	00	M		Y	0	0	HR	3	M				
	35-70	c	05Y 62 00	75YR58	00	M		Y	0	0		0	P				Y
45	0-28	mc1	25Y 52 00	75YR56	00	C		Y	0	0	HR	1					
	28-35	c	25Y 51 00	75YR58	00	C		Y	0	0		0	M				
	35-60	c	05Y 62 00	75YR58	00	M		Y	0	0		0	P				Y
46	0-26	mc1	10YR42 00	75YR56	00	C		Y	0	0		0					
	26-36	mc1	25Y 52 00	75YR58	00	C		Y	0	0		0	M				
	36-60	c	25Y 62 63	75YR58	00	M		Y	0	0		0	P				Y
48	0-30	mc1	25Y 53 51	10YR56	00	C		Y	0	0		0					
	30-45	mc1	25Y 63 61	10YR56	00	C		Y	0	0		0	M				
	45-120	c	25Y 53 51	10YR58	00	M	00MN00	00	Y	0	0	0	P				Y
49	0-28	mc1	25Y 52 00	10YR56	00	C		Y	0	0		0					
	28-47	mc1	25Y 53 00	10YR46	00	C		Y	0	0		0	M				
	47-80	c	25Y 62 00	75YR56	00	M	00MN00	00	Y	0	0	0	P				Y
50	0-30	mc1	10YR41 00	10YR66	00	C		Y	0	0	HR	2					
	30-45	hc1	10YR42 00	10YR66	00	C		Y	0	0		0	M				
	45-55	hc1	10YR63 64	10YR66	00	C		Y	0	0		0	M				
	55-100	c	25Y 62 00	10YR68	00	M		Y	0	0		0	P				Y
51	0-30	c	25Y 52 51	10YR56	00	C	00MN00	00	Y	0	0	0					
	30-35	c	25Y 54 00						0	0	HR	5	M				
	35-70	c	25Y 61 00	75YR58	00	M		Y	0	0		0	P				Y
52	0-35	mc1	10YR63 00	10YR58	00	F			0	0	HR	5					
	35-50	hc1	10YR52 00	10YR58	71	C		Y	0	0		0	M				
	50-90	c	10YR52 58	10YR58	71	C	00MN00	00	Y	0	0	0	P				Y
53	0-25	mc1	10YR43 00	10YR58	00	F			0	0		0					
	25-45	mc1	10YR54 00	10YR58	00	F			0	0		0	M				
	45-65	hc1	10YR62 00	10YR58	71	C		Y	0	0		0	M				
	65-90	c	10YR52 00	10YR58	71	C	00MN00	00	Y	0	0	0	P				Y
54	0-35	mc1	10YR42 00						0	0		0					
	35-45	mc1	10YR42 00						0	0		0	M				
	45-55	hc1	25Y 63 00	75YR58	00	M		Y	0	0		0	M				
	55-90	c	25Y 63 00	75YR58	00	M	00MN00	00	Y	0	0	0	P				Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED		----STONES----			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL
55	0-30	hc1	10YR41 00	10YR58	00	C			Y	0	0	0					
	30-70	c	25Y 52 00	10YR58	00	M	00MN00	00	Y	0	0	0	P				Y
56	0-30	mc1	10YR41 00	10YR46	56	C			Y	0	0	HR	2				
	30-45	c	25Y 52 00	10YR58	00	M			Y	0	0	0	P				Y
	45-80	c	25Y 53 00	10YR58	00	M			Y	0	0	0	P				Y
57	0-30	mc1	25Y 41 00	10YR58	00	C			Y	0	0	0					
	30-60	c	25Y 62 00	75YR58	00	M			Y	0	0	0	P				Y
58	0-33	mc1	10YR54	00						0	0	0					
	33-45	hc1	10YR53 00	10YR56	00	F				0	0	0	M				
	45-90	c	25Y 62 00	75YR58	00	M			Y	0	0	0	P				Y
59	0-30	c	10YR41 00	10YR46	00	C			Y	0	0	0					
	30-70	c	25Y 52 62	75YR56	00	M			Y	0	0	0	P				Y
60	0-20	mc1	10YR42	00						0	0	0					
	20-47	hc1	25Y 72 00	10YR58	00	M			Y	0	0	0	M				
	47-80	c	25Y 62 00	75YR58	00	M			Y	0	0	0	P				Y
61	0-30	hc1	25Y 62 00	10YR58	00	C			Y	0	0	0					
	30-60	c	25Y 62 72	75YR58	00	M			Y	0	0	0	P				Y
62	0-30	mc1	25Y 62 00	10YR66	00	C			Y	0	0	HR	5				
	30-45	hc1	25Y 54 00	10YR56	00	F			Y	0	0	0	M				
	45-80	c	25Y 63 62	10YR58	00	M			Y	0	0	0	P				Y
63	0-30	mc1	25Y 52 00	10YR46	56	C			Y	0	0	0					
	30-100	hc1	10YR53 00	10YR56	00	M	00MN00	00	Y	0	0	0	M				
	100-120	c	25Y 52 00	10YR56	00	C			Y	0	0	0	P				
64	0-28	mc1	10YR53 52	10YR56	00	C			Y	0	0	0					
	28-50	hc1	10YR53 52	10YR56	00	C			Y	0	0	0	M				
	50-90	c	25Y 52 00	10YR58	00	M			Y	0	0	0	P				Y
65	0-33	mc1	10YR42 41	10YR56	00	C	00MN00	00	Y	0	0	0					
	33-45	hc1	25Y 52 53	10YR56	00	C			Y	0	0	0	M				
	45-80	c	25Y 62 00	75YR58	00	M			Y	0	0	0	P				Y