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DIDCOT DEVELOPMENT 2001 - 2011
LOCAL PLANNING STUDY
Site D, New Farm, Milton

Agricultural Land Classification
ALC Map and Report

October 1997

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

DIDCOT DEVELOPMENT 2001 TO 2011
LOCAL PLANNING STUDY
SITE D, NEW FARM, MILTON

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 38.9 ha of land located at New Farm between the A4120 and the A34 Trunk Road to the west of Didcot in Oxfordshire. The survey was carried out during October 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with the Didcot Local Planning Study for the period 2001 to 2011. This survey supersedes any previous ALC information for this land. It is adjacent to a reconnaissance survey carried out by FRCA (formerly Statutory ADAS) in 1996 (FRCA Ref: 3304/001/96).

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of the FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey land use on the site comprised arable land sown with winter cereals and permanent grassland. The grassland was being used to graze horses. The areas mapped as 'Other land' include farm buildings and tracks.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:20,000. It is accurate at this scale but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a	5.5	14.6	14.1
3b	32.1	85.4	82.5
Other land	1.3	-	3.4
Total surveyed area	37.6	100	96.6
Total site area	38.9	-	100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of approximately 1 boring per hectare of agricultural land. Thirty seven borings and four soil pits were described.

8. The agricultural land on this site has been classified as Subgrade 3a (good quality) and Subgrade 3b (moderate quality). The principal limitation to land quality is soil wetness. In an area to the south of the site gradient was equally limiting.

9. The majority of the agricultural land at this site has been mapped as Subgrade 3b with Subgrade 3a occurring in two areas towards the east and centre of the site. The soils observed comprise loamy topsoils overlying loamy and clayey subsoils. The clayey subsoil horizons impede soil drainage and occur at moderate and shallow depths in the profile. The relative depth determines the severity of the soil wetness problem and, therefore, the ALC grade. Soil wetness reduces the versatility of the land in terms of access by machinery (e.g. for cultivations or harvesting) and for grazing if damage to the soil is to be avoided. It also has the effect of reducing the level and consistency of yields.

10. Towards the south of the site, an area was observed to have been disturbed. The soils in this area were similar to those described on the remainder of the site although compacted, and as such this area is mapped as Subgrade 3b. In addition, the landform in this part of the site means that some areas were also limited to Subgrade 3b by gradient. The slopes were measured at between 7.5 and 10.5°. This has the effect of restricting the range of farm machinery which can be safely and efficiently operated.

FACTORS INFLUENCING ALC GRADE

Climate

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

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

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SU 490 914	SU 491 910
Altitude	m, AOD	60	70
Accumulated Temperature	day°C (Jan-June)	1452	1440
Average Annual Rainfall	mm	584	586
Field Capacity Days	days	124	124
Moisture Deficit, Wheat	mm	116	115
Moisture Deficit, Potatoes	mm	111	110
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. Other local climatic factors such as exposure and frost risk are also not believed to affect the site; it is climatically Grade 1.

Site

16. The site lies between approximately 60 and 75m AOD. Over the majority of the site the land rises gently from the north east towards the south west. Slopes across most of this area are gentle and do not affect agricultural land quality. However, towards the south and south-east of the site the natural landscape has been disturbed. This area comprises a plateau at approximately 70m AOD. Towards the margins of this area gradients were measured in the range 7.5° to 10.5°; these are sufficient to restrict land quality to Subgrade 3b. Other site factors such as microrelief and flooding are not significant.

Geology and soils

17. The published geological information for the site (BGS, 1971) show the majority of the site to be underlain by head and younger coombe drift deposits overlying Cretaceous Gault Clay and Upper Greensand solid deposits. The remaining land, towards the south east, is mapped as Upper Greensand.

18. The most detailed published soils information for the site (SSEW, 1971 and 1973) shows it to comprise a combination of Rowsham, Hendred and Thames soil series. Rowsham soils are surface water gleys and are mapped towards the north and east of the site. They are briefly described as, 'clayey or fine loamy drift, overlying clay (Jurassic or Cretaceous)' (SSEW, 1971). Hendred series soils are also surface water gleys and may be described as, 'fine silty or clayey over silty clays' (SSEW, 1971). They are mapped in the south-west and west of the site. Thames series soils are shown towards the north-east and south-east of the site. They are groundwater gleys and are described as, 'clayey overlying calcareous clayey alluvium' (SSEW, 1971). Soils of all these broad types were encountered during the survey.

AGRICULTURAL LAND CLASSIFICATION

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

20. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Subgrade 3a

21. Land of good quality has been mapped in two separate units towards the east and centre of the site. The unit to the east of the site is on flat land. The majority of the unit towards the centre of the site is on a slight (approximately 2-3°) north facing slope; the remaining area is flat. The principal limitation to land quality in these areas is soil wetness. The soils are characterised by the soil pit observation, 4P (see Appendix II).

22. The soils in these areas are of a single type overall. They comprise a heavy clay loam topsoil and upper subsoil overlying clay. On occasion, this passes to a lighter, calcareous, heavy or medium clay loam lower subsoil horizon. The profiles examined are very slightly stony (up to 5% by volume fine soft sandstone and flints) throughout, except where the lighter lower subsoil occurs. Where recorded, this lower horizon is calcareous and contains up to 30% fine soft sandstone by volume. Evidence of soil wetness occurs from the upper subsoil to the depth of the profile, a maximum of 120cm. The heavy clay loam upper subsoils are gleyed and moderately structured. The clay subsoils are, in addition to being gleyed, poorly structured and slowly permeable. The presence of a slowly permeable horizon causes soil drainage to be impeded. This can result in seasonal waterlogging. Given the local climate and the depth to the gleyed and slowly permeable horizons, these soils are appropriately placed in Wetness Class II. Given the relatively dry climate and the heavy topsoils, Subgrade 3a is mapped on the basis of a soil wetness/workability limitation.

23. Soil wetness restricts the versatility of the land by limiting cultivation and/or grazing opportunities without damaging the soil. It is also likely to adversely affect plant growth and therefore yield level and consistency may be reduced.

Subgrade 3b

24. Land of moderate quality has been mapped in a single unit covering the majority of the site. Most of the land in this area is either flat or slightly sloping (up to approximately 3°). The Subgrade 3b unit also includes the area to the south of the site which was considered to be disturbed. The principal limitation in these areas is soil wetness with slope gradient being equally limiting in parts of the disturbed area towards the south of the site. The soils are characterised by the pit observations 1P, 2P and 3P (see Appendix II).

25. The soils across the undisturbed land are of a single type. They comprise a heavy clay loam or clay topsoil overlying poorly structured, gleyed and slowly permeable clay at shallow depth. Occasionally the clay gives way to a lighter, calcareous, medium or heavy clay loam lower subsoil horizon at depth. The topsoils and upper subsoils are mostly very slightly or slightly stony, containing a combination of up to 10% flints and fine soft sandstone by volume. Where the lower subsoil is calcareous the volume of stones increases (up to 25% fine soft sandstone), especially where a medium or heavy clay loam texture is recorded. Evidence of soil wetness is recorded in all the profiles immediately below the topsoil in the form of gleying and manganese concretions. From all the pit observations, the clay horizons were found to be poorly structured and slowly permeable. The combination of a relatively dry climate with this soil drainage status leads to Wetness Class III being appropriate. This, in combination with the heavy topsoils results in a Subgrade 3b land classification. The effects of soil wetness are described in para. 23 above. Subgrade 3b land is less versatile than that classified as Subgrade

3a because the limitations are more severe, ie, access restrictions are greater and crop yields are more likely to be adversely affected.

26. The fields to the south of the site were considered to be disturbed. The current landform is not natural, being flat with steep slopes around the north, east and southern margins. The soil profiles were similar overall to those described in the remainder of the Subgrade 3b mapping unit, ie heavy clay loam or clay topsoils overlying clay, occasionally reverting to lighter textures at depth. The profiles were calcareous throughout and on digging a representative soil pit at 2P, the soils were considered to be compacted as the peds were very firm and there was no visible porosity. The subsoils were again slowly permeable and as a result, the soils are classified as Wetness Class III. As such Subgrade 3b is appropriate for this area given the local climatic parameters, the depth to the slowly permeable layer and the topsoil texture. In addition, the margins of this area comprised slopes in the range 7.5° to 10.5°. These are sufficient to adversely affect agricultural land quality as some precision farm machinery cannot be safely operated in this area. Therefore Subgrade 3b is the most appropriate classification for this land.

Matthew Larkin
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

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Soil Survey of England and Wales (1983) *Soils of South East England. 1:250 000 Scale.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils of South East England. Bulletin No. 15.* SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

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

Grade 2: Very Good Quality Agricultural Land

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

Grade 3: Good to Moderate Quality Land

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

Subgrade 3a: Good Quality Agricultural Land

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

Subgrade 3b: Moderate Quality Agricultural Land

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

Grade 4: Poor Quality Agricultural Land

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

Grade 5: Very Poor Quality Agricultural Land

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

APPENDIX II

SOIL DATA

Contents:

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	**OTH**	Other
DCW:	Deciduous woodland	**BOG:**	Bog or marsh	**SAS:**	Set-Aside
HTH:	Heathland	**HRT:**	Horticultural crops	**PLO:**	Ploughed

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

4. **GLEY/SPL**: Depth in centimetres (cm) to gleying and/or slowly permeable layers.

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

6. **MB (WHEAT/POTS)**: Moisture Balance. (Crop adjusted AP - crop adjusted MD)

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

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

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

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

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

Soil Pits and Auger Borings

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

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

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

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

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

2. **MOTTLE COL**: Mottle colour using Munsell notation.

3. **MOTTLE ABUN**: Mottle abundance, expressed as a percentage of the matrix or surface described:

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

4. **MOTTLE CONT**: Mottle contrast:

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

5. **PED. COL**: Ped face colour using Munsell notation.

6. **GLEY**: If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH**: Stone Lithology - one of the following is used:

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

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

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

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

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

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

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

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

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

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

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

15. Other notations:

APW: available water capacity (in mm) adjusted for wheat
APP: available water capacity (in mm) adjusted for potatoes
MBW: moisture balance, wheat
MBP: *moisture balance, potatoes*

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	DRT	M.REL FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU49009140	CER			26	26	3	3B	125	10	102	-8	3A				WE	3B	
2	SU49109140	CER			28	28	3	3B	128	13	105	-5	2				WE	3B	
3	SU49209140	CER			50	27	3	3B		0		0					WE	3B	IMP 100
4	SU49309140	CER			73	32	3	3B	127	12	105	-5	3A				WE	3B	
5	SU49409140	CER			50	27	3	3B		0		0					WE	3B	
6	SU48909130	CER	N	1	60	28	3	3B	124	9	102	-8	2				WE	3B	
7	SU49009130	CER			25	25	3	3B	119	4	99	-11	3A				WE	3B	
8	SU49109130	CER			55	55	2	3A		0		0					WE	3A	
9	SU49209129	CER			50	50	2	3A		0		0					WE	3A	
10	SU49309130	CER			60	32	3	3B	126	11	103	-7	3A				WE	3B	
11	SU49409130	CER			25	25	3	3B		0		0					WE	3B	
12	SU48909120	CER	N	3	28	28	3	3B		0		0					WE	3B	
13	SU49009120	CER	N	3	60	60	2	3A	128	13	110	0	2				WE	3A	
14	SU49109120	CER	N	2	45	45	2	2	134	19	103	-7	2				WD	2	
15	SU49209120	CER	NE	2	30		2	3A	132	17	104	-6	2				WE	3A	
16	SU49309120	CER	N	1	65	32	3	3B		0		0					WE	3B	
17	SU49409120	CER			50	30	3	3B		0		0					WE	3B	
18	SU48909110	CER	NE	2	28	28	3	3B		0		0					WE	3B	SEE 3P
19	SU49009110	CER	E	2	28	28	3	3B		0		0					WE	3B	
20	SU49109110	CER	E	2	26	26	3	3B	119	4	99	-11	3A				WE	3B	
21	SU49209110	CER			30	30	3	3B	129	14	102	-8	2				WE	3B	SEE 1P
22	SU49309110	CER	NE	1	50	25	3	3B		0		0					WE	3B	
23	SU49409110	CER	N	1	50	28	3	3B		0		0					WE	3B	
24	SU48909100	CER	E	1	60	22	3	3B	97	-18	95	-15	3A				WE	3B	
25	SU49009100	CER	E	1	55	25	3	3B		0		0					WE	3B	
26	SU49109100	CER	E	2	65	28	3	3B		0		0					WE	3B	
27	SU49209100	CER	E	1	28	28	3	3B		0		0					WE	3B	
28	SU49309100	CER	NE	1	50	50	2	3A	132	17	112	2	2				WE	3A	
29	SU49409100	CER	N	1	55	55	2	3A	133	18	112	2	2				WE	3A	SEE 4P
30	SU49009091	CER	E	3	30	30	3	3B		0		0					WE	3B	
31	SU49109090	CER	E	2	45	25	3	3B		0		0					WE	3B	
32	SU49209090	CER	E	2	30	30	3	3B	125	10	103	-7	2				WE	3B	
33	SU49309090	CER			25	25	3	3B	127	12	104	-6	2				WE	3B	
34	SU49109080	PGR	E	2	30	30	3	3B	128	13	105	-5	2			Y	WE	3B	SEE 2P DISTBED
35	SU49209080	PGR			40	40	3	3B		0		0				Y	WE	3B	IMP 65 DISTBED
36	SU49309080	PGR	E	2	25	25	3	3B		0		0				Y	WE	3B	DISTURBED
37	SU49209070	PGR	SW	4	30	30	3	3B		0		0				Y	WE	3B	IMP 75 DISTBED
1P	SU49209110	CER	E	2	38	26	3	3B	120	5	99	-11	3A				WE	3B	PIT 80 AUG 120
2P	SU49109080	PGR	E	2	37	37	3	3B	97	-18	102	-8	3A			Y	WE	3B	PIT 80 DISTBD
3P	SU48909110	CER	E	1	24	24	3	3B	93	-22	98	-12	3B				WE	3B	PIT 70
4P	SU49409100	CER	N	1	26	59	2	3A	107	-8	112	2	3A				WE	3A	PIT 80 AUG 120

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1P	0-26	HCL	25Y 41 42						0	0	HR	3							@ B21 +2% FSST
	26-38	C	25Y 52 53	10YR46	F	D	25Y 52		0	0	FSST	5	MDVCAB	FM	P	Y		Y	
	38-62	C	25Y 52	10YR56	C	D		Y	0	0	FSST	5	MDCAB	FM	P	Y		Y	SL SANDY BDR HCL
	62-120	MCL	25Y 53 63	10YR68	C	D		Y	0	0	FSST	15	MDCAB	FM	P	Y		Y	Y BORDER HCL
2P	0-37	C	25Y 41 42						0	0	HR	5							Y @B34 40%SS IN TS
	37-57	C	10YR41 42	10YR58 68	C	D	MN	Y	0	0	FSST	3	WKCAB	VM	P	Y		Y	Y COMPACTED
	57-80	C	25Y 42	10YR46	C	D	25Y 41	Y	0	0		0	MDCAB	VM	P	Y		Y	Y COMPACTED
3P	0-24	C	25Y 41						0	0	HR	2							BORING 18
	24-63	C	05Y 52	10YR66	C	F		Y	0	0	HR	2	WKCAB	FM	P	Y		Y	BREAKS MDMAB
	63-80	C	25Y 61	10YR68	C	D		Y	0	0	FSST	10	WKCPR	FM	P	Y		Y	Y
4P	0-26	HCL	25Y 41						0	0	FSST	2							BORING 29
	26-59	HCL	25Y 52	10YR66	F	D	MN	Y	0	0	FSST	2	MDCSAB	FR	M				
	59-120	C	05Y 52	10YR68	C	D		Y	0	0	FSST	2	MDCAB	FM	P	Y		Y	Y CALC 80+

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-26	HCL	10YR31 32						0	0	HR	2							
	26-60	C	25Y 52	10YR56	C	D	MN/FE	Y	0	0	HR	2		P			Y		
	60-120	C	25Y 52	10YR56	C	D		Y	0	0	FSST	2		P			Y	Y	
2	0-28	HCL	25Y 31						0	0		0							
	28-55	C	25Y 52	10YR56	C	D	MN	Y	0	0		0		P			Y		
	55-68	C	05Y 42 52	10YR56	C	D		Y	0	0		0		P			Y		
	68-120	C	05Y 61 62	10YR56	C	D		Y	0	0		0		P			Y	Y	
3	0-27	HCL	10YR31						0	0	FSST	2							
	27-50	C	25Y 52	10YR56	F	D	MN/FE		0	0		0		P			Y		SPL NOT GLEYED
	50-70	C	05Y 52	10YR56	C	D		Y	0	0		0		P			Y		
	70-100	C	05Y 52	10YR56	C	D		Y	0	0	FSST	5		P			Y	Y	
4	0-32	HCL	10YR32 42	MN	F				0	0	HR	2							
	32-73	C	25Y 52	10YR56	F	D			0	0	HR	2		P			Y		SPL NOT GLEYED
	73-120	C	05Y 61 62	10YR56	C	D		Y	0	0	FSST	3		P			Y	Y	
5	0-27	HCL	10YR32						0	0	HR	2							
	27-50	C	25Y 42 52	10YR56	F	D	MN/FE		0	0		0		P			Y		SPL NOT GLEYED
	50-75	C	05Y 41 53	10YR56	C	D	FE	Y	0	0	FSST	10		P			Y	Y	
	75-100	HCL	05Y 71 62	10YR56	C	D		Y	0	0	FSST	20		M				Y	
6	0-28	HCL	25Y 41						0	0	HR	3							+2% FSST
	28-60	C	05Y 51	10YR58	F	F			0	0	HR	3		P			Y		+2%FSST SPL NOGL
	60-120	C	05Y 61	10YR68	C	F		Y	0	0	HR	5		P			Y		
7	0-25	HCL	25Y 41						0	0	HR	2							
	25-45	C	25Y 51	10YR56	C	D		Y	0	0	HR	3		P			Y		
	45-60	C	05Y 61	10YR68	C	D		Y	0	0	FSST	10		P			Y	Y	
	60-120	C	05Y 61	10YR58 68	C	D		Y	0	0	FSST	15		P			Y	Y	
8	0-25	HCL	25Y 32 42						0	0	FSST	2							SEE 4P
	25-55	HCL	25Y 51						0	0	FSST	2		M					
	55-80	C	25Y 51	10YR58	C	F		Y	0	0	FSST	5		P			Y		
9	0-30	HCL	10YR32 42						0	0	HR	2							SEE 4P
	30-50	HCL	10YR42	MN	F				0	0		0		M					
	50-70	C	25Y 52 53	10YR56	C	D		Y	0	0		0		P			Y		
	70-95	C	05Y 52 53	10YR56	C	D		Y	0	0	FSST	5		P			Y	Y	
10	0-32	HCL	10YR32 42						0	0	HR	2							
	32-60	C	25Y 52	10YR56	F	D			0	0	FSST	5		P			Y	Y	SPL NOT GLEYED
	60-75	C	05Y 52	10YR56	C	D		Y	0	0	FSST	20		P			Y	Y	
	75-120	C	05Y 71 62	10YR56	C	D		Y	0	0		0		P			Y	Y	
11	0-25	HCL	10YR32 42						0	0	HR	2							
	25-55	C	25Y 52 53	10YR56	C	D	FE	Y	0	0	FSST	10		P			Y		
	55-95	C	05Y 61 71	10YR56	C	D		Y	0	0		0		P			Y	Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	IMP	SPL	CALC	
12	0-28	HCL	25Y 31 41						0	0	HR	3							
	28-60	C	25Y 51	10YR58	C	F		Y	0	0	HR	3		P			Y		+2% FSST
	60-80	C	05Y 61	05YR58	C	D		Y	0	0	FSST	10		P			Y	Y	
13	0-30	HCL	25Y 41						0	0	HR	3							SEE 4P
	30-60	HCL	25Y 61	10YR58	F	F			0	0	HR	5		M					
	60-80	C	25Y 61	75YR58	C	D		Y	0	0	HR	5		P			Y		+5% FSST
	80-120	C	25Y 51	75YR58	C	D		Y	0	0	FSST	20		P					+2% HR
14	0-25	MCL	25Y 42						0	0	HR	3							
	25-45	C	25Y 53	10YR56	F	F			0	0	HR	5		P			Y		SLSNDY SPL NO GL
	45-55	C	25Y 53	10YR56	C	D		Y	0	0	HR	5		P			Y		SL SANDY +10%FSST
	55-85	HCL	25Y 53	10YR58	C	D		Y	0	0	FSST	30		M					SL SANDY +5% HR
	85-120	HCL	10YR54	10YR68	C	D		Y	0	0	FSST	25		M					
15	0-30	HCL	25Y 41						0	0	HR	3							SEE 4P
	30-75	HCL	25Y 61	10YR68	C	D		Y	0	0	FSST	20		M				Y	+5% HR
	75-120	HCL	25Y 62	10YR68	C	D		Y	0	0	FSST	30		M				Y	
16	0-32	HCL	25Y 31						0	0	FSST	2							+5% HR
	32-65	C	25Y 52	10YR56	F	D	FE		0	0	FSST	5		P			Y		SPL NOT GLEYED
	65-90	C	05Y 52 62	10YR56	C	D		Y	0	0	FSST	10		P			Y	Y	
17	0-30	HCL	25Y 31						0	0	HR	2							
	30-50	C	25Y 52	10YR56	F	D	MN/FE		0	0		0		P			Y		SPL NOT GLEYED
	50-95	C	05Y 61 62	10YR66	C	D		Y	0	0	FSST	5		P			Y	Y	
18	0-28	C	25Y 41						0	0	HR	5							SEE 3P +3% FSST
	28-50	C	25Y 51	10YR66	C	F		Y	0	0	FSST	5		P			Y		
	50-70	C	25Y 61	10YR68	C	F		Y	0	0	FSST	10		P			Y	Y	
	70-90	C	25Y 61	10YR68	C	D		Y	0	0	FSST	25		P			Y	Y	
19	0-28	C	25Y 41						0	0	HR	5							+2% FSST
	28-65	C	25Y 51	10YR56	C	F		Y	0	0	FSST	5		P			Y		PLASTIC
	65-90	C	25Y 61	10YR68	C	D		Y	0	0	FSST	20		P			Y	Y	
20	0-26	HCL	25Y 41						0	0	HR	5							+5% FSST
	26-50	C	25Y 52	10YR58	C	D		Y	0	0	FSST	5		P			Y	Y	
	50-75	C	25Y 61	10YR58	C	D		Y	0	0	FSST	3		P			Y	Y	
	75-120	C	05Y 51	10YR68	C	D		Y	0	0	FSST	15		P			Y	Y	
21	0-30	HCL	25Y 41						0	0	HR	3							SEE 1P
	30-50	C	25Y 51	10YR58	C	F		Y	0	0	HR	5		P			Y		
	50-65	C	10YR52	10YR58	C	F	MN	Y	0	0	HR	5		P			Y		
	65-120	HCL	10YR53 63	10YR68	C	D		Y	0	0	FSST	30		M				Y	
22	0-25	HCL	10YR32 42						0	0	FSST	2							+3% HR
	25-50	C	25Y 52	10YR56	F	D	MN		0	0	FSST	5		P			Y		SPL NOT GLEYED
	50-90	C	25Y 53 63	10YR56	C	D		Y	0	0	FSST	20		P			Y	Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
23	0-28	HCL	10YR32 22						0	0	HR	2							+2% FSST
	28-50	C	25Y 52	10YR56	F	D	FE		0	0	FSST	5		P			Y		SPL NOT GLEYED
	50-65	C	05Y 52	10YR56	C	D		Y	0	0	FSST	15		P			Y		
	65-100	C	05Y 51 61	10YR56	C	D		Y	0	0	FSST	5		P			Y	Y	
24	0-22	C	25Y 42						0	0	FSST	5							SEE 3P
	22-60	C	25Y 51 61	10YR68	F	D			0	0	FSST	5		P			Y		SPL NOT GLYD PLAS
	60-90	C	25Y 61	10YR68	C	D		Y	0	0	FSST	15		P			Y	Y	PLASTIC
25	0-25	C	25Y 41 51						0	0	HR	3							SEE 3P +3%FSST
	25-55	C	25Y 52	10YR68	F	D			0	0	FSST	5		P			Y		SPL NOT GLEYED
	55-80	C	25Y 61 62	10YR68	C	D		Y	0	0	FSST	15		P			Y	Y	
26	0-28	C	25Y 41						0	0	HR	2							
	28-65	C	25Y 51	10YR68	F	D			0	0	FSST	2		P			Y		SPL NOT GLEYED
	65-90	C	25Y 61	10YR68	C	D		Y	0	0	FSST	10		P			Y	Y	
27	0-28	HCL	25Y 41						0	0	HR	2							
	28-55	C	05Y 52	10YR58	C	F		Y	0	0	FSST	2		P			Y		
	55-70	C	25Y 52	10YR68	C	F		Y	0	0	FSST	10		P			Y		
	70-90	MCL	25Y 61	10YR68	M	D		Y	0	0	FSST	15		M				Y	
28	0-30	HCL	10YR32 31						0	0		0							SEE 4P
	30-50	HCL	25Y 42 43						0	0		0		M					
	50-75	C	25Y 52 53	10YR56	C	D		Y	0	0		0		P			Y		
	75-120	HCL	25Y 52	10YR56	C	D		Y	0	0	FSST	15		P			Y	Y	
29	0-27	HCL	25Y 32						0	0	HR	1							SEE 4P
	27-55	HCL	25Y 52						0	0		0		M					
	55-85	C	05Y 52 53	10YR56	C	D		Y	0	0	FSST	5		P			Y		
	85-120	C	05Y 52 53	10YR56	C	D		Y	0	0	FSST	10		P			Y	Y	
30	0-30	HCL	25Y 32						0	0	HR	2							
	30-50	C	25Y 52	10YR68	C	D		Y	0	0		0		P			Y		
	50-70	C	05Y 61 62	10YR68	C	D	MN	Y	0	0	FSST	5		P			Y	Y	
31	0-25	C	25Y 42						0	0		0							
	25-45	C	05Y 52 62	10YR56	F	D	MN		0	0	FSST	5		P			Y		SPL NOT GLEYED
	45-90	C	05Y 61 71	10YR56	C	D		Y	0	0	FSST	10		P			Y	Y	
32	0-30	C	25Y 32 31						0	0		0							
	30-75	C	05Y 52 62	10YR56	C	D		Y	0	0		0		P			Y		
	75-120	C	05Y 52 62	10YR56	C	D		Y	0	0	FSST	5		P			Y	Y	
33	0-25	HCL	10YR31						0	0		0							
	25-70	C	25Y 52 53	10YR56	C	D		Y	0	0		0		P			Y		
	70-120	C	25Y 52 53	10YR56	C	D		Y	0	0		0		P			Y	Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
34	0-30	HCL	25Y 41						0	0	HR	2						Y	SEE 2P DISTURBED
	30-50	C	25Y 51	10YR58	68	C	F	Y	0	0		0			P		Y	Y	
	50-70	C	25Y 61 71	10YR58		C	D	Y	0	0		0			P		Y	Y	
	70-120	C	25Y 41	10YR46		C	D	Y	0	0		0			P		Y	Y	
35	0-5	HCL	10YR31						0	0		0							SEE 2P DISTURBED
	5-40	C	05Y 61 71						0	0		0			P			Y	SPL NOT GLEYED
	40-65	HCL	05Y 61 71	10YR68		C	D	Y	0	0	FSST	10			P		Y	Y	IMP 65 +5% HR
36	0-25	C	10YR32						0	0		0						Y	SEE 2P DISTURBED
	25-100	C	05Y 61 62	10YR58		C	D	Y	0	0	FSST	5					Y	Y	
37	0-30	C	25Y 51	10YR68		C	D	Y	0	0		0						Y	SEE 2P DISTURBED
	30-45	C	25Y 61	10YR68		C	D	Y	0	0	FSST	5			P		Y	Y	
	45-65	C	25Y 61 71	10YR68		F	D		0	0		0			P		Y	Y	SL SANDY PLASTIC
	65-75	C	25Y 51	10YR58		M	D	Y	0	0	FSST	10			P		Y	Y	IMP 75