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BASINGSTOKE & DEANE BOROUGH
LOCAL PLAN
SITE 15: PARDOWN, OAKLEY
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JUNE 1993

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BASINGSTOKE AND DEANE BOROUGH LOCAL PLAN

SITE 15: PARDOWN, OAKLEY, HAMPSHIRE

1. SUMMARY

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

1.2 Site 15 comprises 47.9 hectares of land to the north of Basingstoke, Hampshire and was surveyed during April 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 47 borings and three 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 long term limitations on its agricultural use.

At the time of survey, the land was predominantly in cereals.

1.3 The distribution of the grades and sub-grades 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 1:5000. It is accurate at this scale, but any enlargement may be misleading.

Distribution of Grades and Sub-grades

	Area (ha)	% total agricultural land
Grade 2	24.6	51.8
3a	16.9	35.6
3b	6.0	12.6
Total agricultural area	47.5	100.0
Urban	0.4	
Total area of site	47.9 ha	

1.4 Appendix 1 gives a general description of the grades and land use categories identified in this survey.

1.5 Very good to moderate quality agricultural land has been mapped at this site. Land assigned to grade 2 comprises deep soils limited by slight wetness/workability, and occasionally droughtiness. Land graded 3a is limited by droughtiness due to the occurrence of chalk in the subsoil and also, in places, a workability limitation associated with heavy topsoils over clayey subsoils. Additionally some land is limited by topsoil stone volumes in excess of 10% >2 cm. A small unit of subgrade 3b has been mapped comprising heavy topsoils over slowly permeable clay subsoils.

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 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.

Climatic Interpolations

Grid Reference:	SU 575 494	SU 575 490	SU 575 486
Altitude (m):	125	135	145
Accumulated Temperature (°days):	1394	1383	1372
Average Annual Rainfall (mm):	837	845	854
Field Capacity (days):	182	183	184
Moisture Deficit, Wheat (mm):	94	93	91
Moisture Deficit, Potatoes (mm):	83	81	79
Overall Climatic Grade:	1	1	1

3. RELIEF

3.1 The site lies at an altitude of 125-145 m AOD. The highest land in the south, land falling gently in altitude north to a railway line which bounds the site. Nowhere on the site does altitude or relief limit agricultural land quality.

4. GEOLOGY AND SOILS

4.1 The published geology map, BGS (1981) sheet 284, Basingstoke shows the site to be mapped as Cretaceous Upper Chalk. There are two small deposits of Recent and Pleistocene Clay with Flints overlying Upper Chalk mapped towards the western boundary of the site.

4.2 The published soils map, SSEW (1983)sheet 6, "Soils of South East England" shows the site to be mapped as Carstens Association - "Well drained fine silty over clayey soils, often very flinty". A detailed examination of soils on the site revealed soils similar to those described above as well as some shallow chalky soils.

5. AGRICULTURAL LAND CLASSIFICATION

Grade 2

5.1 Land of this quality covers the majority of the site. Profiles comprise topsoils of non-calcareous medium clay loam containing 2-7% flints >2 cm by volume. Upper subsoils typically comprise non-calcareous clay or heavy clay loam, occasionally medium clay loam containing 0-25% flints by volume over lower subsoils of non-calcareous clay containing 2-35% flints. In a few cases chalk was encountered at between 75-100 cm depth. Profiles are well drained, wetness class I but are limited to grade 2 on workability due to the high number of field capacity days at the locality. Pit 3 is an example of this. Many profiles also suffer a droughtiness limitation resulting from the high volumes of profile stone. These cause there to be reduced reserves of available water for crop growth. Within this map unit there are poorer quality profiles but these were not mapped separately due to their limited number and extent.

Subgrade 3A

5.2 Good quality agricultural land is found to the north and south of the site and is limited by workability, droughtiness and topsoil stone either individually or in combination. Profiles typically comprise topsoils of non-calcareous heavy clay loam containing 3-10% flints by volume. Upper subsoils consist of clay, occasionally heavy clay loam containing 0-8% flints >2 cm over lower subsoils of clay with similar stone contents. Profiles are typically well drained, wetness class I. However the heavy texture of topsoils combined with the high number of field capacity days limits land to subgrade 3A due to workability. A small area of land to the north is also limited to this subgrade as evidenced by topsoil stone volumes of 10% flints >2 cm in size.

5.3 To the north, bordering a railway line, topsoils of calcareous medium clay loam containing 4-7% flints by volume overlie chalk at 30-34 cm depth. Roots were found to penetrate 30 cm, as evidenced by pit 2. Profiles are well drained, wetness class I, with a workability grade of 2. However the main limitation is soil droughtiness. The proximity of chalk to the surface restricts available water capacity and limits land to subgrade 3A.

5.4 Finally to the south some profiles are limited to subgrade 3A by combined droughtiness and workability limitations. Occasionally calcareous topsoils of heavy clay loam containing 5-9% flints overlie a thin horizon of typically calcareous clay or heavy clay loam with 3-7% flints. Below this chalk is found at a depth of 33-47 cm depth. Profiles are well drained, wetness class I, but as before, the heavy nature of the topsoil limits land to subgrade 3A on workability. A soil droughtiness risk also limits land to grade 3A due to the proximity of chalk to the surface and the associated reduced soil water availability.

Subgrade 3B

5.5 Moderate quality land is mapped to the south of the site and arises due to a soil wetness limitation. Profiles typically comprise topsoils of medium clay loam containing 1-7% flints by volume. Subsoils consist of

slowly permeable clay with variable stone content 1-20% flints, though typically 1-10%. Profiles are poorly drained, as evidenced by slowly permeable layers from 25-45 cm depth. Soils are assigned to wetness class IV and a grade of 3B. Within this map unit better and poorer quality profiles were encountered, but due to their limited number and distribution were not mapped separately.

5.6 The areas mapped as urban include a sewage works and a track.

ADAS Ref: 1501/030/93
MAFF Ref: EL 15/144

Resource Planning Team
Guildford Statutory Group
ADAS Reading

Sources of Reference

BRITISH GEOLOGICAL SURVEY, 1981. (Sheet 284, Basingstoke) 1:50,000 scale Solid and Drift edition.

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

METEOROLOGICAL OFFICE, 1989. Climatological datasets for agricultural land classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 4 "Soils of South East England", 1:250,000 scale soils map and accompanying legend.

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.

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.

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

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 III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

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. GLEY/SPL : 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 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

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 appropiate 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 : SITE 15 BASINGSTOKE LP Pit Number : 1P

Grid Reference: SU57704870
Average Annual Rainfall : 845 mm
Accumulated Temperature : 1383 degree days
Field Capacity Level : 183 days
Land Use : Cereals
Slope and Aspect : 01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	75YR44 00	0	1		
28- 45	C	75YR54 56	0	1	F	MDCSAB
45- 70	C	75YR56 54	0	1	M	WDCAB

Wetness Grade : 3B
Wetness Class : IV
Gleying :000 cm
SPL :045 cm

Drought Grade : 2
APW : 101mm MBW : 8 mm
APP : 116mm MBP : 35 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : SITE 15 BASINGSTOKE LP Pit Number : 2P

Grid Reference: SU57804850
Average Annual Rainfall : 845 mm
Accumulated Temperature : 1383 degree days
Field Capacity Level : 183 days
Land Use : Cereals
Slope and Aspect : degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	HCL	10YR42 00	0	5		
25- 30	C	75YR54 00	0	8		MDCSAB
30- 43	C	75YR54 00	0	15		MDCSAB
43- 80	C	10YR66 00	0	60		
80-110	CH	00CH00 00	0	5		

Wetness Grade : 3A
Wetness Class : I
Gleying :999 cm
SPL : No SPL

Drought Grade : 2
APW : 119mm MBW : 26 mm
APP : 102mm MBP : 21 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : SITE 15 BASINGSTOKE LP Pit Number : 3P

Grid Reference: SU57404930
Average Annual Rainfall : 845 mm
Accumulated Temperature : 1383 degree days
Field Capacity Level : 183 days
Land Use : Cereals
Slope and Aspect : 02 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MZCL	10YR42 00	0	2		
25- 70	HCL	75YR54 00	0	2		STCSAB
70-120	C	75YR54 56	0	2		MDCSAB

Wetness Grade : 2
Wetness Class : I
Gleying :999 cm
SPL : No SPL

Drought Grade : 1
APW : 145mm MBW : 52 mm
APP : 117mm MBP : 36 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
1	SU57404960	CER	S	02			1	2	78	-15	81	0	3A				DR	3A	ROOTS 60
1P	SU57704870	CER	W	01	000	045	4	3B	101	8	116	35	2				WE	3B	SPL 45
2	SU57504960	CER	S	02			1	2	77	-16	80	-1	3A				DR	3A	ROOTS 60
2P	SU57804850	CER	S				1	3A	119	26	102	21	2				WE	3A	ROOT 110
3	SU57304950	CER	S	03			1	2	83	-10	87	6	3A				DR	3A	ROOTS 64
3P	SU57404930	CER	N	02			1	2	145	52	117	36	1				WE	2	
4	SU57404950	CER	S				1	2	124	31	108	27	1				WE	2	ROOT 105
5	SU57504950	CER	S				1	2	134	41	105	24	1				WE	2	
6	SU57404940	CER	N	03			1	2	124	31	109	28	1				WE	2	
7	SU57504940	CER					1	2	79	-14	87	6	3A				DR	3A	IMP 70CM
8	SU57604940	CER	N	02			1	2	77	-16	82	1	3A				DR	3A	IMP 60
9	SU57704940	CER					1	2	137	44	113	32	1				WE	2	
10	SU57404930	CER	N	03			1	2	136	43	113	32	1				WE	2	
11	SU57504930	CER	N	02			1	2	126	33	106	25	1				WE	2	
12	SU57604930	CER	N	02			1	2	116	23	99	18	2				WE	2	WEDR
13	SU57704930	CER	N	01			1	2	118	25	102	21	2				WE	2	WEDR
14	SU57404920	CER					1	2	123	30	104	23	1				WE	2	
15	SU57504920	CER					1	2	96	3	103	22	3A				DR	3A	IMP 80 Q2DR
16	SU57604920	CER					1	2	126	33	106	25	1				WE	2	
17	SU57704920	CER					1	2	102	9	113	32	2				WE	2	IMP 75 Q2DR
18	SU57404910	CER	E	01			1	2	95	2	107	26	3A				DR	3A	IMP 70 Q2DR
19	SU57504910	CER	N	01			1	2	91	-2	103	22	3A				DR	3A	IMP 70
20	SU57604910	CER	N	01		045	4	3B	124	31	104	23	1				WE	3B	
21	SU57704910	FLW	N	01			1	2	103	10	109	28	2				WE	2	IMP 80
22	SU57404900	CER	N		074	088	1	2	135	42	116	35	1				WE	2	
23	SU57504900	CER	N	02		069	2	3A	118	25	113	32	2				WE	3A	IMP 98
24	SU57604900	CER	N	02			1	2	67	-26	67	-14	3B				WE	2	IMP 40
25	SU57704900	CER	N	02	090	090	1	2	133	40	114	33	1				WE	2	
26	SU57404890	CER	N	03		085	1	2	136	43	116	35	1				WE	2	
27	SU57504890	CER	N	04			1	2	83	-10	83	2	3A				WE	2	IMP 50
28	SU57604890	CER	N	04		055	3	3A	130	37	109	28	1				WE	3A	
29	SU57704890	CER	N	02			1	2	111	18	114	33	2				WE	2	IMP 85
30	SU57404880	STU					1	3A	99	6	114	33	2				WE	3A	IMP 70
31	SU57504880	CER			045		1	2	98	5	113	32	2				DR	3A	IMP 70 Q2DR
32	SU57604880	CER			060	075	2	3A	137	44	116	35	1				WE	3A	Q SPL
33	SU57704880	CER					1	2	106	13	114	33	2				WE	2	IMP 80
34	SU57404870	CER					1	3A	132	39	110	29	1				WE	3A	
35	SU57504870	CER			028	028	4	3B	95	2	100	19	3A				WE	3B	RED SPL
36	SU57604870	CER					1	2	84	-9	90	9	3A				DR	3A	PROB 2DR
37	SU57704870	CER				045	4	3B	128	35	106	25	1				WE	3B	SPL 45
38	SU57804870	CER	E	02		025	4	4	74	-19	74	-7	3A					3B	
39	SU57504860	BAR					1	3A	99	6	101	20	2				WE	3A	ROOTS 77

SAMPLE		ASPECT				--WETNESS--		-WHEAT-		-POTS-		M.REL	EROSN	FROST	CHEM	ALC	
NO.	GRID REF	USE		GRDNT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	COMMENTS
40	SU57604860	BAR				1	2	93	0	104	23	3A				DR 3A	IMP 65
41	SU57704860	BAR	E	01	050 050	3	3A	130	37	107	26	1				WE 3A	
42	SU57804860	BAR	E	01		1	3A	144	51	115	34	1				WE 3A	
43	SU57604850	CER	SW	02		1	3A	82	-11	86	5	3A				DR 3A	ROOTS 65
44	SU57704850	CER	SW	02		1	3A	81	-12	85	4	3A				DR 3A	ROOTS 63
45	SU57804850	CER	W	01		1	3A	115	22	110	29	2				WE 3A	
46	SU57704840	CER	W	02		1	2	101	8	100	19	2				DR 2	TOP ST
47	SU57804840	CER	W	01		1	3A	110	17	104	23	2				WE 3A	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
1	0-30	mcl	10YR53 00						0	0	HR	5						Y
	30-60	ch	00CH00 00						0	0	HR	3		P				Y
1P	0-28	mcl	75YR44 00						0	0	HR	1						
	28-45	c	75YR54 56	05YR56	F		00MN00-	N	0	0	HR	1	MDCSAB F	M	Y			
	45-70	c	75YR56 54	05YR56	M		00MN00-	N	0	0	HR	1	WDCAB F	M	Y		Y	
2	0-30	mcl	10YR53 00						0	0	HR	7						Y
	30-60	ch	00CH00 00						0	0	HR	3		P				Y
2P	0-25	hcl	10YR42 00						0	0	HR	5						
	25-30	c	75YR54 00						0	0	HR	8	MDCSAB F	M	Y			
	30-43	c	75YR54 00				75YR54 00		0	0	HR	15	MDCSAB F	M	Y			
	43-80	c	10YR66 00						0	0	CH	60		M				Y
	80-110	ch	00CH00 00						0	0	HR	5		P				Y
3	0-25	mcl	10YR42 00						0	0	HR	4						
	25-34	mcl	10YR54 00						0	0	CH	5		M				
	34-64	ch	00CH00 00						0	0		0		P				
3P	0-25	mzcl	10YR42 00						0	0	HR	2						
	25-70	hcl	75YR54 00						0	0	HR	2	STCSAB FR	M				
	70-120	c	75YR54 56						0	0	HR	2	MDCSAB F	M	Y			
4	0-29	mcl	10YR42 00						0	0	HR	4						
	29-38	c	75YR54 00						0	0		0		M				
	38-75	hcl	10YR64 00						0	0	CH	40		M				
	75-105	ch	00CH00 00						0	0		0		P				
5	0-30	mcl	10YR42 00						0	0	HR	5						
	30-55	c	10YR43 00						0	0	HR	15		M				
	55-70	c	10YR44 00						0	0	HR	20		M				
	70-100	hcl	10YR64 00						0	0	CH	20		M				Y
	100-120	ch	00CH00 00						0	0	HR	3		P				Y
6	0-30	mcl	10YR42 00						4	0	HR	7						Y
	30-45	hcl	10YR64 73						0	0	HR	20		M				Y
	45-85	c	10YR44 00				00MN00 00		0	0	HR	3		M				
	85-120	c	10YR44 00						0	0	HR	35		M				
7	0-28	mcl	10YR42 00						10	0	HR	12						
	28-60	mcl	10YR43 00						0	0	HR	40		M				
	60-70	hcl	75YR54 00						0	0	HR	40		M				
8	0-30	mcl	10YR42 00						10	0	HR	12						
	30-45	hcl	10YR43 00						0	0	HR	25		M				
	45-60	c	75YR54 00						0	0	HR	35		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
9	0-27	mzcl	10YR42 00						0	0	HR	3						
	27-62	mcl	10YR43 00						0	0	HR	10		M				
	62-67	hcl	10YR43 00						0	0	HR	3		M				
	67-120	c	75YR54 00						0	0	HR	10		M				
10	0-27	mcl	10YR42 53						0	0	HR	4						
	27-35	mcl	10YR44 00						0	0	HR	5		M				
	35-45	hcl	10YR44 00						0	0	HR	5		M				
	45-120	c	10YR66 00						0	0	HR	3		M				
11	0-28	mcl	10YR42 53						0	0	HR	5						
	28-40	c	75YR54 00						0	0	HR	10		M				
	40-120	c	75YR54 00				00MN00	00	0	0	HR	17		M				
12	0-30	mcl	10YR42 00						0	0	HR	7						
	30-80	c	75YR54 00						0	0	HR	25		M				
	80-120	c	75YR54 00						0	0	HR	30		M				
13	0-30	mcl	10YR42 00						3	0	HR	7						
	30-70	c	75YR54 00				00MN00	00	0	0	HR	20		M				
	70-120	c	75YR54 00				00MN00	00	0	0	HR	30		M				
14	0-27	mcl	10YR42 00						0	0	HR	5						
	27-40	mcl	75YR54 00						0	0	HR	15		M				
	40-45	hcl	75YR54 00						0	0	HR	15		M				
	45-120	c	75YR56 00				00MN00	00	0	0	HR	20		M				
15	0-27	mcl	10YR42 00						0	0	HR	3						
	27-45	mcl	10YR54 00						0	0	HR	20		M				
	45-70	c	75YR54 00						0	0	HR	20		M				
	70-80	c	75YR54 00						0	0	HR	30		M				
16	0-28	mcl	10YR42 00						0	0	HR	3						
	28-58	mcl	75YR54 00						0	0	HR	15		M				
	58-120	c	75YR54 43						0	0	HR	20		M				
17	0-35	mcl	10YR43 00						3	0	HR	3						
	35-48	hcl	10YR44 00	00MN00	00	F			0	0	HR	3		M				Y
	48-75	c	75YR56 00	75YR52	00	F	00MN00	00	0	0	HR	10		M				Y
18	0-28	mcl	10YR43 00						0	0	HR	3						
	28-50	hcl	10YR56 00						0	0	HR	5		M				
	50-70	c	75YR56 00	75YR58	00	F	00MN00	00	0	0	HR	25		M				
19	0-33	mcl	10YR43 00						0	0	HR	5						
	33-45	hcl	10YR43 44						0	0	HR	10		M				
	45-70	c	10YR44 00						0	0	HR	30		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
20	0-32	mcl	10YR43 00						0	0	HR	5						
	32-45	hcl	10YR44 00						0	0	HR	20		M				
	45-120	c	05YR46 00	00MN00	00	C			0	0	HR	20		M			Y	
21	0-30	mcl	10YR43 00						0	0	HR	5						
	30-60	mcl	10YR43 44						0	0	HR	10		M				
	60-80	c	75YR46 56	00MN00	00	C			0	0	HR	15		M				
22	0-32	mcl	10YR43 00						4	0	HR	6						
	32-56	hzcl	10YR54 00						0	0	HR	2		M				
	56-74	c	75YR56 00	10YR72 00	F		00MN00 00		0	0	HR	3		M				Y
	74-88	c	75YR56 00	10YR72 00	C		00MN00 00	Y	0	0	HR	5		M				Y
	88-120	c	05YR46 00	00MN00	00	M		Y	0	0	HR	10		P			Y	Y
23	0-25	mzcl	10YR43 00						3	0	HR	5						
	25-38	mcl	10YR43 00	75YR46 00	F		00MN00 00		0	0	HR	3		M				
	38-55	hcl	10YR44 00						0	0	HR	3		M				Y
	55-69	c	10YR44 00	00MN00	00	M			0	0	HR	10		M				Y
	69-98	c	05YR46 00	05YR63 00	F		00MN00 00	Y	0	0	HR	8		P			Y	Y
24	0-26	mcl	10YR43 00						3	0	HR	5						
	26-40	hcl	10YR44 00	00MN00	00	F			0	0	HR	2		M				
25	0-26	mzcl	10YR43 00						2	0	HR	4						
	26-37	hcl	10YR54 00	00MN00	00	C			0	0	HR	2		M				
	37-52	c	10YR56 00	00MN00	00	C			0	0	HR	5		M				
	52-90	c	75YR56 00	75YR53 00	F		00MN00 00		0	0	HR	10		M				Y
	90-120	c	05YR46 00	75YR53 00	C		00MN00 00	Y	0	0	HR	10		P			Y	Y
26	0-35	mcl	10YR53 00						0	0	HR	3						
	35-46	hcl	10YR54 00						0	0	HR	4		M				
	46-55	c	10YR56 00						0	0	HR	2		M				Y
	55-85	c	75YR56 00	05YR46 00	F				0	0	HR	2		M				Y
	85-120	c	05YR46 00						0	0	HR	4		P			Y	Y
27	0-28	mcl	10YR44 00						0	0	HR	3						
	28-50	hcl	10YR56 00						0	0	HR	4		M				Y
28	0-28	mcl	10YR54 00						2	0	HR	4						
	28-36	hcl	10YR44 00						0	0	HR	3		M				
	36-55	c	75YR46 00	00MN00	00	F			0	0	HR	3		M				Y
	55-120	c	05YR46 00	00MN00	00	C			0	0	HR	5		P			Y	Y
29	0-32	mcl	10YR54 00						4	0	HR	6						
	32-46	hcl	10YR56 00	00MN00	00	C			0	0	HR	2		M				
	46-56	c	10YR54 00	75YR46 00	F				0	0	HR	2		M				
	56-65	mcl	10YR54 00	75YR46 00	C				0	0	HR	2		M				
	65-85	c	75YR56 00	00MN00	00	M			0	0	HR	5		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
30	0-28	hcl	10YR43 00						0	0	HR	3						
	28-37	hcl	75YR54 56				00MN00 00		0	0	HR	1		M				
	37-57	c	75YR54 56				00MN00 00		0	0	HR	1		M				
	57-70	c	75YR55 56	75YR46 00	C		00MN00 00		0	0	HR	8		M				
31	0-23	mcl	10YR53 43						0	0	HR	3						
	23-45	hcl	10YR54 00	10YR56 00	F		00MN00 00		0	0	HR	1		M				
	45-70	c	10YR53 00	10YR56 00	M		00MN00 00	Y	0	0	HR	5		M				
32	0-29	mcl	10YR43 00						0	0	HR	2						
	29-45	mcl	10YR54 44						0	0	HR	1		M				
	45-60	hcl	10YR54 00				00MN00 00		0	0	HR	2		M				
	60-75	c	10YR53 00	10YR56 00	C		00MN00 00	Y	0	0	HR	1		M				
	75-120	c	05YR56 00						0	0	HR	1		P			Y	
33	0-27	mcl	10YR43 00						0	0	HR	3						
	27-40	hcl	10YR44 00						0	0	HR	2		M				
	40-80	c	10YR44 00	05YR56 00	M				0	0	HR	4		M				
34	0-28	hcl	10YR42 00						3	0	HR	6						
	28-120	c	10YR44 56				00MN00 00		0	0	HR	8		M				
35	0-25	mcl	10YR43 00						0	0	HR	6						
	25-28	hcl	10YR43 00						0	0	HR	6		M				
	28-80	c	05YR56 46				00MN00 00		0	0	HR	3		P			Y	
36	0-28	mcl	10YR43 00						0	0	HR	7						
	28-40	c	75YR46 56				00MN00 00		0	0	HR	10		M				
	40-60	c	75YR46 56				00MN00 00		0	0	HR	20		M				
37	0-28	mcl	10YR43 00						0	0	HR	5						
	28-45	c	75YR46 56						0	0	HR	3		M				
	45-120	c	75YR56 00	05YR56 00	M		00MN00 00		0	0	HR	3		P			Y	
38	0-25	hcl	10YR43 00						0	0	HR	5						
	25-50	c	75YR56 00	05YR46 56	M		00MN00 00		0	0	HR	3		P			Y	
39	0-28	hcl	10YR43 00						3	0	HR	5						
	28-47	c	05YR46 00	00MN00 00	F				0	0	HR	3		M				
	47-77	ch	00CH00 00						0	0		0		P				
40	0-32	mcl	10YR43 00						3	0	HR	5						
	32-55	c	75YR46 00						0	0	HR	5		M				
	55-65	c	75YR46 00						0	0	HR	15		M				
41	0-25	mcl	10YR43 00						3	0	HR	5						
	25-30	hcl	10YR43 00						0	0	HR	5		M				
	30-50	c	10YR46 00						0	0	HR	5		M				
	50-120	c	75YR46 00	10YR53 00	C		00MN00 00	Y	0	0		0		P			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
42	0-28	hcl	10YR42 43						0	0	HR	5						
	28-50	c	75YR56 00						0	0	HR	2		M				
	50-75	c	75YR46 00	00MN00	00	M			0	0		0		M				
	75-95	c	75YR56 00	00MN00	00	C			0	0		0		M				
	95-120	sc	75YR46 56	00MN00	00	C			0	0		0		M				
43	0-25	hcl	10YR43 00						7	0	HR	9						Y
	25-35	c	75YR56 00						0	0	HR	5		M				Y
	35-65	ch	00CH00 00						0	0		0		P				Y
44	0-28	hcl	10YR43 00						4	0	HR	7						Y
	28-33	hcl	10YR44 00						0	0	HR	7		M				Y
	33-63	ch	00CH00 00						0	0		0		P				Y
45	0-32	hcl	10YR43 00						6	0	HR	8						Y
	32-50	c	75YR46 56						0	0	HR	5		M				Y
	50-68	c	75YR46 56	00MN00	00	F			0	0	HR	5		M				Y
	68-98	ch	00CH00 00						0	0		0		P				Y
46	0-30	mcl	10YR43 00						8	0	HR	10						Y
	30-40	hcl	10YR54 00						0	0	HR	10		M				Y
	40-50	hzcl	10YR64 00						0	0	CH	2		M				Y
	50-80	ch	00CH00 00						0	0		0		P				Y
47	0-29	hcl	10YR43 00						8	0	HR	10						Y
	29-65	c	10YR44 00						0	0	HR	10		M				
	65-95	ch	00CH00 00						0	0		0		P				Y