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Wokingham District Local Plan
Sites SA03/ SA04/ SA05, Hurst, Berkshire
Agricultural Land Classification
February 1996

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION

WOKINGHAM DISTRICT LOCAL PLAN

SITES SA03/ SA04/ SA05, HURST, BERKSHIRE

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of a total of 14.0 ha of land on three sites between Tape Lane and Lodge Road at Hurst, near Winnersh in Berkshire. The survey was carried out in February 1996
2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading, in connection with the Wokingham District Local Plan. This site was previously surveyed in 1976 (ADAS Ref 0206/006/76), although not under the current guidelines and the current survey therefore supersedes all previous ALC surveys on this land.
3. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey all land on the site was under pasture.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10 000. 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 the tables below. Table 1 presents the ALC statistics for the three combined sites. Table 2 presents the statistics for SA03, and Table 3 the statistics for SA 05. There is no separate table for SA04; all of the site (1.0 hectare) is classified as Subgrade 3a.

Table 1: Area of grades and other land, Sites SA03, SA04 and SA05 combined

Grade/ Other land	Area (hectares)	% Total site area	% Agricultural Land
3a	7.7	55.0	55.8
3b	6.1	43.6	44.2
Other land	0.2	1.4	
Total agricultural area	13.8	98.6	100.0
Total site area	14.0	100.0	-

Table 2: Area of grades and other land, Sites SA03

Grade/ Other land	Area (hectares)	% Total site area	% Agricultural Land
3a	0.9	36.0	36.0
3b	1.6	64.0	64.0
Total agricultural area	2.5	100.0	100.0
Total site area	2.5	100.0	-

Table 3: Area of grades and other land, Sites SA05

Grade/ Other land	Area (hectares)	% Total site area	% Agricultural Land
3a	5.8	55.2	56.3
3b	4.5	42.9	43.7
Other land	0.2	1.9	
Total agricultural area	10.3	98.0	100.0
Total site area	10.5	100.0	-

7. The fieldwork was conducted at an average density of one boring per hectare with supplementary borings where necessary. On this site 14 borings and 2 soil pits were described.

8. The soil textures and structures observed in some auger borings and in one inspection pit, indicate that a crop would suffer from a lack of water in the summer months which could depress yields. Referred to as soil 'droughtiness' this can restrict the versatility of the land to varying degrees, depending on its severity.

9. The profiles described in other borings suggest that soil drainage is impeded by slowly permeable horizons at varying depths, imposing a limitation on land quality due to soil 'wetness'. Seasonal waterlogging reduces the number of days on which the land can be worked with machinery, or grazed without the risk of poaching, and root development is restricted by prolonged wet conditions.

10. Land quality was mapped as Subgrade 3a, (good quality), in the west of the site, with moderate limitations of both soil droughtiness and soil wetness in this area.

11. The east of the site was limited to Subgrade 3b on the basis of more extreme soil droughtiness, having shallow profiles which overlie gravelly horizons.

Factors Influencing ALC Grade

Climate

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

10. The key climatic variables used for grading this site are given in Table 4 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 4: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SU 795 737
Altitude	m, AOD	37
Accumulated Temperature (>0°C Jan-June)	day°C	1479
Average Annual Rainfall	mm	673
Field Capacity Days	days	140
Moisture Deficit, Wheat	mm	116
Moisture Deficit, Potatoes	mm	111

11. 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.

12. 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.

13. The combination of rainfall and temperature on this site mean that there is no limitation on grade due to climate. Neither exposure nor frost are considered to be a problem, and this site is climatically Grade 1.

Site

14. The site is bounded by gardens and a nursery to the north, and by roads to the east and west. The area directly to the south has been built on since the Ordnance Survey map was produced. The site is almost level, at an average altitude of 37 m AOD. Extensive areas of water were observed on the surface when the site was first visited on 17 January. A week later, much of the surface water had drained away, although the occupier stated that the field was often waterlogged and he had great difficulty in driving over it in the winter.

Geology and soils

15. The most detailed published geological information (BGS, 1971: Sheet 268), shows the site to be underlain by a solid geology of London Clay, with a drift cover of valley gravels.

16. The most detailed published soils information (SSEW, 1983), records the whole area as having soils corresponding to the Hurst association. Hurst soils are described as 'coarse and fine loamy permeable soils, mainly over gravel, variably affected by groundwater' (SSEW, 1984).

Agricultural Land Classification

17. 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.

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

Subgrade 3a

19. Good quality land was mapped in an area broadly described as the western half of the site, on the basis of both soil droughtiness and soil wetness limitations.

20. Profiles have medium sandy loam or medium clay loam topsoils which are very slightly to slightly stony (1-10% total hard stones), and fall into three main types.

21. The first type is found where deep profiles occur with medium sandy loam or medium clay loam upper subsoils passing into loamy sand or sandy clay loam or clay, with loamy sand or medium sand at depth. No slowly permeable horizons were encountered here, as confirmed in inspection pit 2P. Horizons are very slightly to slightly stony. This land is well to imperfectly drained (Wetness Class I or II(Appendix II)), and is limited to Grade 2 or Subgrade 3a by slight soil droughtiness.

22. The second main type of soil profile occurs towards the east of the site, where moderately to very stony horizons, which are impenetrable to the auger, occur. Where soil depth extends to approximately 60 cm over these stony horizons, the amount of water available to a crop is insufficient for its needs, to such a degree that the land is restricted to Subgrade 3a on the basis of a moderate soil droughtiness limitation.

23. Profiles are imperfectly drained (Wetness Class II). No slowly permeable horizons were encountered, and the land is not limited in quality by soil wetness. Medium clay loam upper subsoils overlie heavy clay loam lower subsoils above moderately to very stony horizons. Soil inspection pit 1P at boring 4 showed that similar horizons contained 30% total stones to approximately 50 cm depth, and 50% total stones to approximately 75 cm depth. Beyond 75 cm depth, the horizons are classed as gravel, having over 70% total stones

24. The third soil type relates to those soils in which slowly permeable horizons were encountered. The presence of these poorly structured layers results in the soils being less well drained (Wetness Class III). Very slightly stony medium clay loam or sandy clay loam upper subsoils (1-2% total hard stones), which sometimes pass into stoneless loamy medium sand lower subsoils, overlie slowly permeable clay horizons. These soils fall into Subgrade 3a on the basis of soil wetness limitations.

25. In most of this Subgrade 3a mapping unit, the texture, soil depth, and stone content of the soils result in there being a limited amount of available soil water in the profile that a crop could utilise, which could produce drought stress. This would affect the crop during the drier months of the year and it imposes a limitation on the type of crops that can be grown or on their potential yield. This soil droughtiness restricts the land quality to Subgrade 3a.

26. Land quality in other areas was limited to Subgrade 3a by soil wetness. Generally, soils with slowly permeable subsoils can prove difficult to work during the wetter months of the year and the yield potential and choice of crops grown are limited by poor drainage.

Subgrade 3b

27. Moderate quality land was mapped in the eastern half of the site, on the basis of soil droughtiness.

28. High groundwater in the shallow soils over gravels in the east of the site gives rise to the pools of surface water observed at the time of survey, although the water table is expected to be approaching its highest level at this time of year.

29. Slightly stony medium sandy loam topsoils (8% total hard stones), overlie gleyed upper subsoils which have similar textures and stone contents. Lower subsoils are moderately stony sandy clay loams (30% total hard stones), which are impenetrable to the auger at 40-70 cm depth but were confirmed by inspection pit 1P. Lower horizons become very stony (50% total hard stones), and pass into gravel at approximately 75 cm depth. No slowly permeable horizons were encountered, and the land is not limited in quality by soil wetness, falling into Wetness Class II.

30. In the north of the site, some profiles were found to be deeper over the stony horizons, although their light, sandy textures do not provide sufficient available water to improve their quality above Subgrade 3b.

31. Sandy textures, combined with the often shallow profiles and stony subsoils of these soils, result in there being a limited amount of soil water that a crop could utilise, which would result in a greater degree of drought stress than in the areas of the site mapped as Subgrade 3a. This would affect a crop during the drier months of the year and it imposes a more severe limitation on the type of crops that can be grown or on their potential yield. This restricts the land quality to Subgrade 3b.

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SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No.268, Reading*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South-East England.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

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

Grade 2: Very Good Quality Agricultural Land

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

Grade 3: Good to Moderate Quality Land

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

Subgrade 3a: Good Quality Agricultural Land

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

Subgrade 3b: Moderate Quality Agricultural Land

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

Grade 4: Poor Quality Agricultural Land

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

Grade 5: Very Poor Quality Agricultural Land

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

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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

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

Assessment of Wetness Class

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

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

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

APPENDIX III

SOIL DATA

Contents:

Sample location map

Soil abbreviations - Explanatory Note

Soil Pit Descriptions

Soil boring descriptions (boring and horizon levels)

Database Printout - Horizon Level Information

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

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

Boring Header Information

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

ARA: Arable	WHT: Wheat	BAR: Barley
CER: Cereals	OAT: Oats	MZE: Maize
OSR: Oilseed rape	BEN: Field Beans	BRA: Brassicae
POT: Potatoes	SBT: Sugar Beet	FCD: Fodder Crops
LIN: Linseed	FRT: Soft and Top Fruit	FLW: Fallow
PGR: Permanent Pasture	LEY: Ley Grass	RGR: Rough Grazing
SCR: Scrub	CFW: Coniferous Woodland	DCW: Deciduous Wood
HTH: Heathland	BOG: Bog or Marsh	FLW: Fallow
PLO: Ploughed	SAS: Set aside	OTH: Other
HRT: Horticultural Crops		

3. **GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
4. **GLEYS/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	EX: Exposure
FR: Frost Risk	GR: Gradient	MR: Microrelief
FL: Flood Risk	TX: Topsoil Texture	DP: Soil Depth
CH: Chemical	WE: Wetness	WK: Workability
DR: Drought	ER: Erosion Risk	WD: Soil Wetness/Droughtiness
ST: Topsoil Stoniness		

Soil Pits and Auger Borings

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

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

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

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

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

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

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

4. **MOTTLE CONT:** Mottle contrast

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

15. Other notations

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

SOIL PIT DESCRIPTION

Site Name : WOKINGHAM DLP SA03/04/05 Pit Number : 1P

Grid Reference: SU79607390 Average Annual Rainfall : 673 mm
 Accumulated Temperature : 0 degree days
 Field Capacity Level : 140 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	MSL	10YR41 00	3	8	HR	C				
20- 40	MSL	10YR41 51	0	5	HR	C	MDCSAB	FR	M	
40- 52	SCL	10YR52 00	0	30	HR	C	MDCSAB	FR	M	
52- 75	SCL	10YR52 00	0	50	HR	C			M	
75-120	GH	10YR52 00	0	0		C			M	

Wetness Grade : 1 Wetness Class : II
 Gleying : 0 cm
 SPL : No SPL

Drought Grade : 3B APW : 089mm MBW : -27 mm
 APP : 087mm MBP : -24 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WOKINGHAM DLP SA03/04/05 Pit Number : 2P

Grid Reference: SU79407360 Average Annual Rainfall : 673 mm
 Accumulated Temperature : 0 degree days
 Field Capacity Level : 140 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MSL	10YR42 00	3	10	HR	F				
25- 45	SCL	25 Y62 00	0	18	HR	C	WKCSAB	FR	M	
45- 60	HCL	25 Y62 00	0	30	HR	M	WKCSAB	FR	M	
60- 90	LMS	05 Y62 00	0	15	HR	C	WKCSAB	FR	M	
90-115	MS	05 Y71 00	0	15	HR	C	WKCSAB	FR	M	
115-120	GH	05 Y71 00	0	0		C			M	

Wetness Grade : 1 Wetness Class : II
 Gleying : 025 cm
 SPL : No SPL

Drought Grade : 3A APW : 098mm MBW : -18 mm
 APP : 087mm MBP : -24 mm

FINAL ALC GRADE : 3A
 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		LIMIT
1	SU79607400	PGR	020		2	1	068	-48	072	-39	3B			DR	3B	IMP 70, SEE 1P
1P	SU79607390	PGR	0		2	1	089	-27	087	-24	3B			DR	3B	AT BORING 4
2	SU79407390	PGR	020		2	1	119	3	106	-5	3A			DR	3A	
2P	SU79407360	PGR	025		2	1	098	-18	087	-24	3A			DR	3A	AT BORING 12
3	SU79507390	PGR	0		2	1	084	-32	086	-25	3B			DR	3B	SEE 1P
4	SU79607390	PGR	020		2	1	092	-24	096	-15	3B			DR	3B	IMP 57, SEE 1P
5	SU79307380	PGR	030	100	2	1	142	26	110	-1	2			DR	2	
6	SU79507380	PGR	045		1	1	137	21	113	2	2			DR	2	
7	SU79607380	PGR	0	075	2	2	135	19	117	6	2			WD	2	
8	SU79407370	PGR	0	055	3	3A	144	28	114	3	2			WE	3A	
9	SU79507370	PGR	0		1	1	088	-28	088	-23	3B			DR	3B	SEE 1P
10	SU79607370	PGR	030		2	2	070	-46	070	-41	3B			DR	3B	IMP 40, SEE 1P
11	SU79307360	PGR	030	050	3	3A	111	-5	109	-2	3A			WD	3A	IMP 90, SEE 2P
12	SU79407360	PGR	025	045	3	3A	130	14	105	-6	2			DR	3A	NOT SP, SEE 2P
13	SU79507360	PGR	0		2	2	097	-19	103	-8	3A			DR	3A	IMP 60
14	SU79407350	PGR	0		2	2	077	-39	077	-34	3B			DR	3B	BORDER 3A

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		
8	0-35	mzc1	10YR41 00 10YR46 00 C					Y	2	0	HR	2					
	35-55	sc1	10YR52 00 10YR58 00 C					Y	0	0	HR	2		M			
	55-120	sc	10YR63 00 10YR68 00 M				25	Y63	00	Y	0	0	0		P		Y
9	0-40	mzc1	10YR41 00 10YR46 00 F						2	0	HR	2					
	40-50	mzc1	10YR41 00 10YR46 00 F						0	0	HR	25		M			IMP 50 GRAVELLY
10	0-30	mzc1	10YR42 00						5	0	HR	5					SEE 1P
	30-40	mzc1	10YR41 00 75YR56 00 C					Y	0	0	HR	8		M			IMP 40 GRAVELLY
11	0-30	mc1	10YR42 00						1	0	HR	1					
	30-40	mc1	10YR52 00 10YR56 00 C					Y	0	0		0		M			
	40-50	ms1	10YR63 00 10YR68 00 C					Y	0	0		0		M			
	50-90	c	10YR63 00 10YR68 71 M					Y	0	0	HR	5		P		Y	
12	0-25	mc1	10YR42 00 10YR46 00 F						2	0	HR	2					
	25-45	hc1	10YR52 00 10YR71 68 C					Y	0	0	HR	5		M			
	45-70	c	10YR63 00 10YR68 71 C					Y	0	0	HR	8		M			
	70-90	ms1	05 Y63 00 10YR68 00 C					Y	0	0		0		M			
	90-120	lcs	05 Y62 00					Y	0	0		0		M			
13	0-30	mzc1	10YR41 00 10YR46 00 C					Y	2	0	HR	2					SEE 1P
	30-45	mc1	10YR52 00 10YR58 00 C					Y	0	0	HR	5		M			
	45-60	hc1	10YR51 00 10YR58 71 C					Y	0	0	HR	6		M			IMP 60, GRAVELLY
14	0-30	mc1	10YR42 00 10YR48 00 C					Y	2	0	HR	2					SEE 1P
	30-40	hc1	10YR52 00 10YR56 00 C					Y	0	0		0		M			
	40-45	hc1	10YR62 00 10YR68 00 M					Y	0	0		0		M			IMP 45 GRAVELLY