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DOVER DISTRICT LOCAL PLAN-OBJECTOR SITES LAND AT WALMER, DEAL, KENT (INCLUDING OBJECTOR SITES 4, 5 AND 6)

Agricultural Land Classification
ALC Map and Report

June 1998

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

DOVER DISTRICT LOCAL PLAN - OBJECTOR SITES

LAND AT WALMER, DEAL, KENT, INCLUDING OBJECTOR SITES 4, 5, AND 6.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 34.4 ha of land to the south of Walmer, near Deal in Kent. The survey was carried out during May and June 1998.

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 its statutory input to the Dover District Local Plan. The survey covers three objector sites, numbers 4, 5 and 6 at Dover Road, Station Road and Liverpool Road respectively. In order to provide a context for appraising the current objector sites further, adjacent land was also surveyed. This survey supersedes any previous ALC information for this land. Information from a previous survey to the west of this area (FRCA Ref: 2004/136/93) has been used to assist in compiling this report and the accompanying ALC map.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of 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 the majority of the agricultural land within the surveyed area was in cereals, with one field under permanent grass and being grazed by horses. The area mapped as 'Other land' was scrub.

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 objector sites and all of the surveyed land are summarised in Tables 1 to 4 inclusive.

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. In total, 35 borings and four soil pits were described.

8. The agricultural land within the survey area has been classified in the range Grade 2 (very good quality) to Subgrade 3b (moderate quality) with a small proportion shown as Subgrade 3a (good quality). Principal limitations to land quality include soil droughtiness, gradient and local climatic factors (exposure).

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

Table 1: Area of grades - Objector Site 4

Grade/Other land	Area (hectares)	% site area
2	3.6	85.7
3a	0.6	14.3
Total site area	4.2	100

Table 2: Area of grades - Objector Site 5

Grade/Other land	Area (hectares)	% site area
2	1.8	100
Total site area	1.8	100

Table 3: Area of grades and other land - Objector Site 6

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	0.6	54.5	35.3
3b	0.5	45.5	29.4
Other land	0.6	-	35.3
Total surveyed area	1.1	100	64.7
Total site area	1.7	-	100

Table 4: Area of grades and other land - Land at Walmer

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	25.6	75.8	74.5
3a	6.4	18.9	18.6
3b	1.8	5.3	5.2
Other land	0.6	-	1.7
Total surveyed area	33.8	100	98.3
Total site area	34.4	-	100

9. Within the area mapped as Grade 2 the soils comprise medium silt topsoils overlying similar subsoils. In the area to the north west of Walmer Court Farm these overlie weathered chalk. Given the prevailing local climatic parameters these soils are slightly restricted in terms of the amount of moisture available for crop growth such that they have a minor soil droughtiness limitation. This can adversely affect crop yields, especially in drier years. Some of these profiles are of Grade 1 quality, but the location of the site means that it is at risk of exposure to potentially damaging winds, as indicated by wind pruning of perennial vegetation within the survey area and therefore Grade 2 is more appropriate, due to limitations in the growth of some fruit crops.

10. Within the area mapped as Subgrade 3a the soils comprise medium silt topsoils over a medium silty subsoil passing to a pure chalk substrate at shallow and moderate depths. The principal limitation in these circumstances is soil droughtiness due to the restricted availability of water to plants caused by the limited moisture holding capacity of, and the restricted rooting into, the chalk substrate.

11. Subgrade 3b has been mapped where gradients were measured in excess of 7° towards the east of the site. This is sufficient to restrict the safe and efficient use of certain farm machinery such that Subgrade 3b is most appropriate.

FACTORS INFLUENCING ALC GRADE

Climate

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

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

Table 5: Climatic and altitude data

Factor	Units	Values		
Grid reference	N/A	TR 373 497	TR 367 495	TR 364 499
Altitude	m, AOD	10	45	30
Accumulated Temperature	day°C (Jan-June)	1484	1445	1462
Average Annual Rainfall	mm	716	749	736
Field Capacity Days	days	151	156	154
Moisture Deficit, Wheat	mm	120	114	116
Moisture Deficit, Potatoes	mm	117	109	112
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

14. 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.

15. 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 (ATO, January to June), as a measure of the relative warmth of a locality.

16. The combination of rainfall and temperature within this survey area means that there is no overall climatic limitation. However, climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. At this locality the high moisture deficits may enhance the likelihood of soil droughtiness problems.

17. At the local scale differences in the aspect, gradient and elevation of the land can significantly modify the overall climate, particularly in relation to temperature, exposure and

frost risk. In certain situations exposure may constitute a significant climatic factor in its own right. Persistent strong or cold winds can be damaging to crops or cause stress to livestock, especially in wet weather. Many coastal areas are exposed to strong, salt-laden winds and their effects can extend for several miles inland.

18. At this site evidence, in the form of wind pruning of surrounding trees and hedgerows, suggests that the prevailing south-westerly wind may have an effect on crop growth over parts of the survey area, to the extent of reducing the yield potential and range of crops which may be grown successfully. This area is also known to be affected by north-easterly winds in spring (Met. Office, 1970). This can have an additional damaging effect on top fruit. The parts of the survey area site above 25m AOD have therefore been restricted to a maximum classification of Grade 2 based on climatic factors.

Site

19. The survey area lies between approximately 10m and 45m AOD. The majority is level or gently sloping, with the highest land found around Walmer Court Farm. A dry valley trending south-west, north of Claytons Hill has moderately sloping sides. To the east the land slopes strongly towards Rays Bottom and gradients are sufficient (at 10°) to adversely affect agricultural land quality, restricting the classification to Subgrade 3b. Other restrictions such as microrelief do not affect the survey area.

Geology and soils

20. The most detailed published geological information for this area (BGS, 1977) shows the majority to be underlain by Head Brickearth with Upper Chalk on the south-west and eastern margins.

21. The most detailed published soils information covering the whole area (SSEW, 1980) shows the site to comprise soils of the Coombe series. These are described as 'variably chalky and flinty silty soils in Head associated with shallow chalky silty soils over Chalk' (SSEW, 1980). In addition, the extreme north-west (north of the 50 northing gridline) of the site has been mapped in greater detail (SSEW, 1973). This survey shows this area as being underlain by Hamble series soils. These are described as deep, well drained silty soils developed in brickearth. The soils across the site are broadly concurrent with the descriptions given.

AGRICULTURAL LAND CLASSIFICATION

22. The details of the classification of the survey area are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

23. 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.

Grade 2

24. Land of very good quality has been mapped over the majority of the area surveyed. The principal limitation to land quality is soil droughtiness and, in addition, the higher land around Walmer Court Farm and Claytons Hill was assessed as having a climatic limitation due

to exposure (see para. 18). The soils are characterised by pit observations 1P, 2P and 3P (see Appendix II).

25. Three soil types are described within this Grade in the survey area, none of which exhibited significant evidence of wetness and are all assigned to Wetness Class I. The most extensive is characterised by soil pit 3. It occurs in the east and south-east of the survey area and over the area adjacent to Station Road (Objector Site 5), except for the south-east corner. The soils comprise a non-calcareous medium silty clay loam topsoil overlying similar, though calcareous, subsoils. These horizons were assessed as slightly stony, containing between 6 and 15% total flints by volume. However the combination of soil texture and stone content is sufficient to reduce the available plant water to the extent that within local climatic parameters, particularly the high moisture deficits, soil droughtiness is the principal limitation.

26. The next most extensive soil type is characterised by soil pit 2 and occurs in the north-centre of the survey area, east of Walmer Court Farm. The soils comprise non-calcareous medium silty clay loam topsoils overlying similar subsoils. Stone content within the profile was not significant, rarely exceeding 3% flints by volume. Within the local climate, these profiles are not limited by soil droughtiness. However the exposed nature of the area imposes a climatic limitation of Grade 2 (see para. 18).

27. The third soil type within this grade occurs to the north of Walmer Court Farm and in the south-east corner of the land adjacent to Station Road. It is characterised by soil pit 1 and the soils generally have a higher clay content. They comprise a non-calcareous medium or heavy silty clay loam topsoil over non-calcareous medium and heavy silty clay loam upper subsoils. The lower subsoil comprises similar textures which are calcareous, containing up to 35% chalk fragments by volume. Where chalk content is high the soils can feel lighter, ie medium as opposed to heavy silty clay loam. Hard chalk was encountered at around 100cm. In the pit, plant roots were not visible below 95cm although it is possible that they could penetrate further. The principal limitation to the agricultural use of these soils is soil droughtiness because given local climatic parameters, it is likely that insufficient water will be available to crops, especially in drier years; this can have an adverse effect on the level and consistency of yields.

Subgrade 3a

28. Land of good quality has been mapped in one area towards the south of the survey area. The principal limitation to land quality within this unit is soil droughtiness. The soils are variants of those described by the pit observations 1P and 4P. Soil pit 4 represents the shallowest soil types present within the survey area which are mainly confined to a small area around boring 26. The majority are deeper and resemble shallower variants of soil pit 1.

29. The soils comprise a calcareous medium silty clay loam topsoil which occasionally passes directly to chalk or more often passes through calcareous medium or heavy silty clay loam subsoils before becoming impenetrable to the soil auger. The profiles were impenetrable due to either flints or chalk in the profile. The topsoils are moderately stony overall with up to 10% flints and 15% chalk fragments by volume. The upper subsoils are more stony with up to 30% chalk fragments and/or 10% flints by volume. Given the relatively dry soil conditions prevalent at the time of the survey, these stone volumes and underlying hard, though weathered, chalk were sufficient to cause these profiles to be impenetrable to the soil auger

between 33 and 55cm. None of the profiles exhibited signs of wetness and as such all are assigned to Wetness Class I. From the soil pit, 1P, very few and fine roots were evident at 80cm, a total of 50cm into the weathered blocky chalk substrate. At the pit location this represents a profile which lies on the border between Subgrade 3a and 3b. As the remaining borings in the area have a deeper soil resource and are either assumed to lie or, observed to lie, over chalk, this area has been placed in Subgrade 3a on the basis of a soil droughtiness limitation. This is due to the restricted rooting in the chalk and the reduction in available water capacity that this and the stone content produces in these silty soils. This will cause yields to be lower and less consistent than those achieved from the Grade 2 land elsewhere within the survey area.

Subgrade 3b

30. Land of moderate quality has been mapped in one area to the east of the area surveyed. The principal limitation is gradient. Slopes were measured in the range 7.5° to 10.5°. These are sufficient to adversely affect agricultural land quality as some farm machinery cannot be safely or effectively operated in this area.

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SOURCES OF REFERENCE

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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 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	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TR36505010	CER					1	1	155	39	121	9	2		Y		DR	2	2P
2	TR36405000	CER	N	1			1	1	108	-8	117	5	3A		Y		DR	2	IMP 75 3P
3	TR36505000	CER	NW	2			1	1	159	43	123	11	1		Y		EX	2	2P
4	TR36404990	CER	N	1			1	1	114	-2	118	6	3A		Y		DR	2	IMP 80 3P
5	TR36504990	CER	N	2			1	1	104	-12	117	5	3A		Y		DR	2	IMP 70 3P
6	TR36304980	CER	N	1			1	1	108	-8	116	4	3A		Y		DR	2	IMP 75 3P
7	TR36404980	CER					1	1	137	21	114	2	2		Y		DR	2	IMP 85 1P
8	TR37204970	CER	E	5			1	1	157	41	121	9	2		Y		DR	2	2P
9	TR37304970	CER					1	1	49	-67	49	-63	4				DR	2	IMP 30 3P
10	TR36704960	WHT	N	1			1	2	99	-17	108	-4	3A		Y		WD	2	IMP 65 1P
11	TR36804960	CER					1	1	158	42	122	10	1		Y		EX	2	2P
12	TR36904960	CER	E	1			1	1	157	41	121	9	2		Y		DR	2	2P
13	TR37204960	WHT	E	1			1	1	125	9	115	3	2		Y		DR	2	IMP 85 3P
14	TR37304960	CER					1	1	113	-3	117	5	3A				DR	2	IMP 80 3P
15	TR36704950	WHT	SE	1			1	1	75	-41	75	-37	3B		Y		DR	2	IMP 45 1P
16	TR36804950	CER					1	1	156	40	120	8	2		Y		DR	2	2P
17	TR36904950	CER	NE	1			1	1	159	43	123	11	1		Y		EX	2	2P
18	TR37004950	CER	E	2			1	1	151	35	117	5	2		Y		DR	2	2P
19	TR37204950	CER	E	10			1	1		0		0			Y		GR	3B	10 DEGREES
20	TR36704940	PGR	SE	2			1	1	77	-39	77	-35	3B		Y		DR	3A	IMP 50 4P/1P
21	TR36804940	CER	SE	1			1	1	80	-36	83	-29	3B		Y		DR	3A	IMP 55 4P/1P
22	TR36904940	CER	SE	2			1	1	157	41	121	9	2		Y		DR	2	2P
23	TR37004940	CER	E	1			1	1	147	31	114	2	2		Y		DR	2	2P
24	TR37104940	WHT	SE	2			1	1	74	-42	74	-38	3B		Y		DR	3A	IMP 50 3P/1P
25	TR37204940	CER	E	3			1	1	153	37	119	7	2				DR	2	3P
26	TR36804930	CER	S	4			1	1	51	-65	51	-61	4		Y		DR	3B	4P LOC BDR 3A
27	TR36904930	CER	SE	4			1	1	105	-11	97	-15	3A		Y		DR	3A	IMP 40 4P
28	TR37004930	CER	SE	6			1	1	121	5	115	3	2		Y		DR	2	IMP 90 3P
29	TR37104930	CER	SE	5			1	1	118	2	112	0	3A				DR	2	IMP 90 3P
30	TR37204930	CER					1	1	110	-6	114	2	3A				DR	2	IMP 80 3P
31	TR36904920	CER					1	1	57	-59	57	-55	4		Y		DR	2	IMP 33 4P/1P
32	TR37004920	CER	N	6			1	1	119	3	114	2	3A		Y		DR	2	IMP 90 3P
33	TR37104920	CER	E	6			1	1	102	-14	94	-18	3A				DR	3A	IMP 50 4P
34	TR37104910	CER	E	2			1	1	139	23	124	12	2				DR	2	IMP 100 1P
35	TR37014924	CER					1	1	102	-14	115	3	3A		Y		DR	3A	IMP 70 3P
1P	TR36704950	CER	NE	1			1	2	124	8	114	2	2		Y		WD	2	P105A120 RTS95
2P	TR36904940	WHT	SE	2			1	1	158	42	122	10	1		Y		EX	2	PIT 90 AUG 120
3P	TR37204930	CER	E	1			1	1	147	31	113	1	2				DR	2	PIT100 AUG 120
4P	TR36804930	CER	S	3			1	1	93	-21	92	-18	3B		Y		DR	3B	ROOTS80 A/BBDR

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	0-38	MZCL	10YR42						0	0	HR	5							
	38-120	HZCL	10YR54						0	0	HR	5		M					
2	0-38	MZCL	10YR42						3	0	HR	8							
	38-58	MZCL	10YR43						0	0	HR	8		M					
	58-75	HZCL	10YR53						0	0	HR	10		M					IMP FLINTS 75
3	0-38	MZCL	10YR42						0	0	HR	5							
	38-52	MZCL	10YR54						0	0		0		M					
	52-120	HZCL	10YR64						0	0		0		M					
4	0-38	MZCL	10YR42						2	0	HR	8							
	38-60	MZCL	10YR54						0	0	HR	5		M					
	60-80	HZCL	10YR64						0	0	HR	10		M					IMP FLINT 80
5	0-38	MZCL	10YR42						2	0	HR	8							
	38-70	HZCL	10YR54						0	0	HR	8		M					IMP FLINT 70
6	0-38	MZCL	10YR42						2	0	HR	8							
	38-60	MZCL	10YR43						0	0	HR	8		M					
	60-75	HZCL	10YR54						0	0	HR	12		M					IMP FLINTS 75
7	0-38	MZCL	10YR42						2	0	HR	8							
	38-55	HZCL	10YR54						0	0	HR	8		M					
	55-80	ZC	10YR43	10YR66	C	F		S	0	0	HR	10		M					SLIGHTLY GLEYED
	80-85	MZCL	10YR73 81						0	0	CH	60		M			Y		
	85-120	CH	25Y 81						0	0		0		P			Y		IMP 85
8	0-38	MZCL	10YR42						3	0	HR	8							
	38-90	MZCL	10YR44						0	0		0		M					
	90-120	MZCL	10YR54						0	0		0		M					
9	0-30	MZCL	10YR42						3	0	HR	15							IMP FLINTS 30
10	0-30	HZCL	10YR43						0	0	HR	5							
	30-65	HZCL	10YR46				FEW MN		0	0	HR	10		M					
11	0-32	MZCL	10YR42						0	0	HR	5							
	32-60	MZCL	10YR53						0	0	HR	2		M					
	60-90	HZCL	10YR54	10YR66	F	F			0	0		0		M					
	90-120	HZCL	10YR63	10YR66	F	F			0	0		0		M					
12	0-32	MZCL	10YR42						2	0	HR	7							
	32-120	MZCL	10YR53						0	0		0		M					
13	0-25	MZCL	10YR42						8	3	HR	15					Y		+5% CHALK
	25-35	MZCL	10YR54						0	0	CH	10		M			Y		+10% FLINTS
	35-55	MZCL	10YR73						0	0	CH	20		M			Y		+3% FLINTS
	55-85	FSZL	10YR72						0	0	CH	5		M			Y		IMP FLINTS 85

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
14	0-38	MZCL	10YR42						3	0	HR	8							
	38-60	MZCL	10YR54						0	0	HR	5		M				Y	
	60-80	HZCL	10YR44						0	0	HR	15		M				Y	IMP FLINT 80
15	0-35	MZCL	10YR42 43						4	0	HR	10							1P NEARBY
	35-45	HZCL	10YR44 64	10YR46	C	D	FEW MN	S	0	0	HR	15		M				Y	+2%CH IFLINTS45
16	0-33	MZCL	10YR42						2	0	HR	7							
	33-50	HZCL	75YR44						0	0	HR	5		M					
	50-120	HZCL	10YR54						0	0		0		M					
17	0-32	MZCL	10YR42						2	0	HR	5							
	32-50	MZCL	75YR54						0	0		0		M					
	50-70	HZCL	75YR54	10YR64	F	F		S	0	0		0		M					SLIGHTLY GLEYED
	70-120	MZCL	10YR54						0	0		0		M					
18	0-36	MZCL	10YR42						3	0	HR	10							
	36-120	MZCL	10YR64						0	0	HR	5		M					
20	0-27	MZCL	10YR43						0	0	CH	15						Y	+5% FLINTS
	27-40	HZCL	10YR44						0	0	CH	25		M				Y	+5% FLINTS
	40-50	MZCL	10YR63 43						0	0	CH	30		M				Y	+10% FLINTS
21	0-16	MZCL	10YR43						2	0	HR	10						Y	
	16-39	MZCL	10YR53						0	0	HR	10		M				Y	+10% CHALK
	39-55	HZCL	10YR64 81						0	0	CH	30		M				Y	+10% HR IMP 55
22	0-32	MZCL	10YR42						2	0	HR	7							2P NEARBY
	32-45	MZCL	75YR54						0	0		0		M					
	45-70	HZCL	75YR54						0	0		0		M					
	70-120	MZCL	10YR54						0	0		0		M					
23	0-37	MZCL	10YR42						3	0	HR	10							
	37-90	MZCL	10YR54						0	0	HR	10		M					
	90-120	MZCL	10YR64						0	0	HR	10		M					
24	0-30	MZCL	10YR42 43						6	1	HR	15						Y	
	30-50	MZCL	10YR44 54						0	0	HR	25		M				Y	+3%CH IMP HR 50
25	0-38	MZCL	10YR42						3	0	HR	8							
	38-50	MZCL	10YR54						0	0	HR	5		M					
	50-80	HZCL	10YR54						0	0	HR	5		M				Y	
	80-120	MZCL	10YR53						0	0	HR	5		M				Y	
26	0-25	MZCL	10YR43						0	0	HR	10						Y	4P NEARBY
	25-32	MZCL	10YR53						0	0	CH	50		M				Y	+10% HR IMP 32
27	0-30	MZCL	10YR42						2	0	HR	10						Y	
	30-40	MZCL	10YR43						0	0	CH	30		M				Y	
	40-90	CH	25Y 81						0	0		0		P				Y	IMP 40

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	
28	0-36	MZCL	10YR42						3	0	HR	10							
	36-90	HZCL	10YR54						0	0	HR	8		M				Y	IMP FLINT 90
29	0-30	MZCL	10YR42						3	0	HR	12							
	30-90	MZCL	10YR53						0	0	HR	10		M				Y	IMP FLINT 90
30	0-29	MZCL	10YR42						3	0	HR	8							3P LOCATION
	29-80	MZCL	10YR54						0	0	HR	10		M				Y	IMP FLINT 80
31	0-30	MZCL	10YR42 53						3	0	HR	8							
	30-33	HZCL	10YR66				FEW MN		0	0	HR	10							IMP FLINTS 33
32	0-32	MZCL	10YR42						3	0	HR	12							
	32-70	HZCL	10YR56	10YR68	C	F		S	0	0	HR	8		M					
	70-90	MZCL	10YR66						0	0	HR	8		M					IMP FLINT 90
33	0-25	MZCL	10YR42						3	0	HR	10							
	25-40	MZCL	10YR54						0	0	CH	30		M				Y	+5% FLINTS
	40-90	CH	25Y 81						0	0		0		P				Y	IMP 50
34	0-37	MZCL	10YR42						0	0		0							
	37-90	MZCL	10YR53						0	0	HR	5		M					
	90-100	MZCL	10YR54						0	0	CH	30		M				Y	IMP 100
35	0-36	MZCL	10YR42						3	0	HR	10							
	36-70	MZCL	10YR54						0	0	HR	8		M				Y	IMP FLINTS 70
1P	0-29	HZCL	10YR42						3	0	HR	12							PIT NEAR BOR 15
	29-65	HZCL	10YR54						0	0	HR	7	MDCSAB	FR	M	N			
	65-83	HZCL	75YR44				75YR42		0	0	HR	5	MDCSAB	FR	M	N		Y	
	83-100	HZCL	10YR66						0	0	CH	35			M			Y	+5% FLINTS
	100-120	CH	25Y 81						0	0	HR	5			P			Y	ROOTS VIS TO 95
2P	0-31	MZCL	10YR43						1	0	HR	3		FR					PIT NEAR BOR 22
	31-120	MZCL	10YR54				10YR44		0	0	HR	2	MDCSAB	FR	M	N			FEW MN 85+
3P	0-28	MZCL	10YR42						3	0	HR	12							PIT AT BOR 30
	28-60	MZCL	10YR54						0	0	HR	10	MDCSAB	FR	M	N		Y	
	60-120	MZCL	10YR54						0	0	HR	5	MDCSAB	FR	M	N		Y	
4P	0-30	MZCL	10YR42 43						2	1	HR	5						Y	+10%CH PITNR 26
	30-80	CH	10YR81						0	0		0			P			Y	VFEW ROOTS @ 80