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KENT MINERALS LOCAL PLAN REVIEW
Additional land at Kennington

Agricultural Land Classification
ALC Map and Report

September 1998

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 2001/048/98
MAFF Reference: EL 20/01847

AGRICULTURAL LAND CLASSIFICATION REPORT

KENT MINERALS LOCAL PLAN REVIEW
ADDITIONAL LAND AT KENNINGTON

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 46.3 ha of land to the east of the A28 and north of Conningbrook at Kennington, near Ashford in Kent. The majority of survey work was carried out during September 1998, with some work also undertaken in November 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 Kent Minerals Local Plan Review. This survey supersedes any previous ALC information for this land, including a 1986 survey (FRCA Ref: 2001\091\86). The site lies to the immediate south of another site (FRCA Ref: 2001\024\98), surveyed at the same time for the Local Plan Review.

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 land use on the site comprised a mixture of cereal stubble and potatoes with smaller areas being used for set-aside and permanent grass. The areas mapped as 'Other land' comprise disused buildings, the Great Stour and a railway line.

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 Table 1.

7. The fieldwork was conducted at an average density of 1 boring per hectare. In total, 42 borings and three soil pits were described.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
1	18.5	41.5	40.0
2	15.8	35.4	34.1
3b	10.3	23.1	22.2
Other Land	1.7	-	3.7
Total surveyed area	44.6	100.0	96.3
Total site area	46.3	-	100.0

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

8. Just over three-quarters of the agricultural land surveyed has been classified as Grades 1 and 2 (excellent and very good quality, respectively). This land tends to occur in conjunction with geological drift deposits of head brickearth. The remainder of the site has been classified as Subgrade 3b (moderate quality), including a small area close to Orchard Farm which has been subject to past disturbance.

9. Where Grade 1 land is mapped, the soils are deep, well drained and comprise medium silty textured topsoils over similarly textured subsoils which sometimes become heavier at depth. The soils are either stoneless or very slightly stony and, despite the dry locality, the reserves of soil available water are high and will be sufficient to meet crop needs throughout the growing season in most years. As a result, this land has no or very minor limitations to agricultural use and is suitable for a very wide range of agricultural or horticultural crops.

10. The land classified as Grade 2 is subject to a minor soil wetness limitation. These soils are also deep and silty in texture, but due to seasonally fluctuating groundwater levels are moderately well drained. The interaction between the medium textured topsoils and soil drainage characteristics at this locality means that this land will be subject to slight restrictions on the flexibility of cropping, stocking and cultivations.

11. Adjacent to the Great Stour, the land classified as Subgrade 3b is restricted by a significant soil wetness limitation. Here, poorly drained soils are derived from alluvial deposits, which comprise heavy textured soils and, in parts, peaty and humified soils. Parts of this land are flatter and lower-lying and flooding is believed to regularly occur. This risk of flooding significantly restricts the range of crops which could be grown. Near Orchard Farm, the land classified as Subgrade 3b is subject to both soil droughtiness and wetness limitations. Here, land disturbed in the past has given rise to compact gravelly subsoils which are likely to impose significant restrictions on the agricultural versatility of such land.

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 2 overleaf and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

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 (AT0, January to June), as a measure of the relative warmth of a locality.

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	TR 032 452	TR 033 448
Altitude	m, AOD	40	35
Accumulated Temperature	day°C (Jan-June)	1459	1466
Average Annual Rainfall	mm	764	762
Field Capacity Days	days	161	160
Moisture Deficit, Wheat	mm	115	116
Moisture Deficit, Potatoes	mm	111	112
Overall climatic grade	N/A	Grade 1	Grade 1

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 soil moisture deficit values are above average for this region. As a result the likelihood of soil droughtiness problems may be increased. No climatic factors, such as exposure or frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

Site

17. The survey area is situated in the Great Stour valley. The lowest lying land (approximately 32m AOD) occurs either side of the Stour watercourse. To the west of the railway, the land rises through gentle gradients of 1-2° to lie at about 43m AOD, the highest point on the site, along the eastern site boundary. Nowhere on the site do gradient or microrelief adversely affect agricultural land quality. Land immediately next to the Great Stour is flatter and lower-lying; this land is believed to regularly flood.

Geology and soils

18. The published geological information for this area (BGS, 1978) shows the northern two-thirds of the site to be underlain by Gault Clay. The remainder is mapped as Folkestone Beds. However, both of these solid geological deposits are completely overlain by drift deposits. The predominant is head brickearth. In the extreme north of the site, third terrace river gravels occur. Alluvial deposits are mapped across the flatter, lower-lying land, adjacent to the Stour, in the south of the site.

19. The most detailed published soils information, at 1:25,000 scale, covering the area (SSEW, 1973) shows five different soil series across the site. Most of the site, on the higher, slightly sloping land, is mapped as the Hook Series. These soils are described as 'Gleyed brown earth ... in silty drift (brickearth)', (SSEW, 1973). The Park Gate Series, mapped where the head brickearth occurs proximate to the alluvial deposits, is similar to the Hook Series but with 'a fluctuating water-table .... drainage is imperfect, locally poor', (SSEW, 1973).

20. Two discrete areas on the slightly higher land between the railway line and the Stour have been mapped as the Enborne-Conway Map Unit and the Ditton Series. The former are

described as 'Ground-water gley soil (non-calcareous) in loamy ... silty riverine alluvium', (SSEW, 1973). The Ditton soils are described as 'Gleyed brown earth .... in loamy drift over and partly from Folkestone Beds', (SSEW, 1973). Immediately fringing the Stour, the Fladbury Series has been mapped in broad association with the alluvium. These soils are described as 'Ground-water gley soil in clayey riverine alluvium', (SSEW, 1973). Detailed field examination found the distribution and description of the soils on site to generally accord with that outlined above.

AGRICULTURAL LAND CLASSIFICATION

21. 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.

22. 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 1

23. Grade 1, excellent quality, land occurs on the higher land associated with the head brickearth deposits. This land has no or very minor limitations to agricultural use. Profiles comprise non-calcareous silt loam and, occasionally, medium silty clay loam topsoils. These overlie similarly textured, brownish and permeable upper subsoils. At approximately 44-70 cm depth, these profiles pass into permeable silty textured (medium/heavy silty clay loam) lower subsoils, some of which become gleyed due to fluctuating groundwater levels. Topsoils are stoneless or very slightly stony, containing 0-2% total flints. Subsoils have a similar stone content. From Pit 2, which represents such profiles, the subsoils were found to be moderately structured; these profiles were assessed as well drained (Wetness Class I). The combination of medium textured topsoils, free soil drainage and the prevailing climate means that this land has no or very minor restrictions on the flexibility of cropping, stocking and cultivations. In addition, the high silt content of the topsoils means that these profiles have high reserves of soil available water to support a wide range of agricultural or horticultural crops throughout the growing season in most years. Consequently Grade 1 is appropriate.

Grade 2

24. Grade 2, very good quality, land occurs on the gently falling mid-slopes of the site. This land is limited by minor soil wetness. The soils are similar to those assigned to the Grade 1 mapping unit but, being on slightly lower-lying land, are subject to seasonally fluctuating groundwater levels. Although gleyed within 40 cm depth, these profiles are permeable and, consequently, are assessed as moderately well drained (Wetness Class II). These profiles are represented by Pit 3. The interaction between the medium textured topsoils and soil drainage characteristics at this locality means that this land will be subject to slight restrictions on the flexibility of cropping, stocking and cultivations.

Subgrade 3b

25. All of the land classified as Subgrade 3b, moderate quality, is subject to significant soil wetness and workability limitations. In the vicinity of the Stour, poorly drained profiles arise from slowly permeable subsoils which occur directly below the topsoil. Topsoils are variably textured; typically medium (silty) and heavy (silty) clay loams. These pass into medium or heavy clay loam or clay subsoils which are poorly structured and slowly permeable. The surface water movement through these layers will be significantly reduced. This results in poor soil drainage (Wetness Class IV), as indicated by gleying either from the surface or below the topsoil. Such profiles are typified by Pit 1.

26. Some of the profiles adjacent to the Stour are subject to seasonally high groundwater levels. Non-calcareous medium and heavy textured topsoils overlie permeable medium silty clay loam upper subsoils which pass into lighter (peaty loam, medium sandy silt loam) lower subsoils at approximately 50-80 cm depth. These profiles are gleyed directly below the topsoil but no slowly permeable layer occurs within 80 cm. However, the flat and low-lying nature of this land means that artificial drainage measures are likely to prove inadequate due to lack of falls and freeboard, and that groundwater levels would be high for much of the year. At the time of survey (September 1998), these profiles were very moist from the surface. Consequently, this land was assessed as being poorly drained (Wetness Class IV).

27. Across this entire mapping unit, the interaction between the soil drainage characteristics, the topsoil textures and the prevailing climate means that all of this land is classified as Subgrade 3b because of soil wetness. Soil wetness of this degree adversely affects seed germination and survival, and inhibits the development of a good root system. Soil wetness also imposes restrictions on cultivations, trafficking by machinery or grazing by livestock.

28. Land immediately adjacent to the Great Stour has also been classified as Subgrade 3b because of a flooding risk. This land is flat and low-lying and the floods tend to occur regularly, 1-10 times, each year, between late autumn and early spring (personal communication with a farm labourer). Land at risk from flooding tends to be less flexible for arable cropping, both due to potential crop damage and the restrictions placed on the timings of cultivations.

29. Near Orchard Farm, the land classified as Subgrade 3b is subject to both soil droughtiness and wetness limitations. Here, land disturbed in the past has given rise to compact gravelly subsoils which are likely to impose significant restrictions on the agricultural versatility of such land. Soil droughtiness limitations means that this land will be subject to low and inconsistent crop yields.

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SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No. 289, 1:50,000, Canterbury, (solid and drift edition).* 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 (1973) *Sheet TR04 (Ashford), Soils in Kent I, 1:25,000 and accompanying book.* 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	TR03004530	POT			37		2	2	177	61	141	29	1				WE	2	
2	TR03104530	POT			56		1	1	186	70	151	39	1					1	Sl gleyed 90+
3	TR03204530	POT			44		1	1	141	25	145	33	2					1	I80dry Prob 1
4	TR03304530	POT			65		1	1	190	74	156	44	1					1	
5	TR03104520	POT					1	1	191	75	157	45	1					1	
6	TR03204520	POT					1	1	179	63	143	31	1					1	Sl gleyed 90+
7	TR03304520	POT					1	1	175	59	139	27	1					1	
8	TR03404520	STB			33		2	2	175	59	139	27	1				WE	2	
9	TR03504520	STB			30		2	2	185	69	137	25	1				WE	2	
10	TR03104510	POT			56		1	1	191	75	157	45	1					1	
11	TR03204510	POT					1	1	181	65	145	33	1					1	Sl gleyed 60
12	TR03304510	STB					1	1	174	58	138	26	1					1	
13	TR03404510	STB	SE	2			1	1	171	55	132	20	1					1	Sandy lwr subs
14	TR03504510	STB	SE	2	50		1	1	174	58	138	26	1					1	
15	TR03604510	STB			30	60	3	3A	163	47	132	20	1				WE	3A	
16	TR03144498	STB	SE	2			1	1	179	63	143	31	1					1	Sl gleyed 75
17	TR03204500	STB	SE	2			1	1	182	66	146	34	1					1	Sl gleyed 70
18	TR03304500	STB	SE	2	50		1	1	177	61	141	29	1					1	
19	TR03404500	STB	E	2	65	75	2	2	173	57	152	40	1				WE	2	
20	TR03504500	STB			35		2	2	174	58	138	26	1				WE	2	
21	TR03104490	STB	E	2	36		2	2	196	80	158	46	1				WE	2	
22	TR03204490	STB	E	2	44		1	1	193	77	158	46	1					1	
23	TR03304490	STB			64		1	1	197	81	158	46	1					1	
24	TR03404490	STB			38		2	2	195	79	142	30	1				WE	2	
25	TR03504490	STB			27		2	2	159	43	123	11	1				WE	2	
26	TR03604490	SAS			70		1	1	156	40	118	6	2				DR	2	Sl gleyed 50
27	TR03704490	SAS			25	25	4	3B		0		0		Y			WE	3B	Alluvial;flood
28	TR03204480	STB			38		2	2	188	72	153	41	1				WE	2	
29	TR03304480	STB			28		2	2	193	77	136	24	1				WE	2	
30	TR03404490	STB			27		2	2	175	59	124	12	1				WE	2	
31	TR03504480	SAS			30		4	3B		0		0					WE	3B	G'water WC IV
32	TR03304470	STB			28		2	2	180	64	125	13	1				WE	2	
33	TR03404470	SAS			28	28	4	3B		0		0					WE	3B	Alluvial
34	TR03504470	SAS			35	90	4	3B		0		0		Y			WE	3B	Alluvial;flood
35	TR03604470	ARA			22	22	4	3B		0		0		Y			WE	3B	Alluvial;flood
36	TR03504460	ARA			29		4	3B		0		0		Y			WE	3B	G'water WC IV
37	TR03004520	FLW	E	1			1	1	163	47	127	15	1					1	
38	TR03004510	FLW	E	1			1	1	163	47	127	15	1					1	
39	TR03004480	PGR	E	1	20		4	3B	99	-17	106	-6	3A				WE	3B	Imp60 Distb'd
40	TR03104480	PGR	E	1	0		2	2	163	47	127	15	1				WE	2	
41	TR03104470	PGR	E	1	0		2	2	162	46	126	14	1				WE	2	
42	TR03104480	FLW			28	28	4	3B		0		0					WE	3B	Water at 90

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
1P	TR03404470	SAS			25	25	4	38	159	43	123	11	1					WE	38	Alluvial
2P	TR03104500	STB					1	1	159	43	123	11	1						1	
3P	TR03504500	STB			30		2	2	159	43	123	11	1					WE	2	Friable h(z)cl

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	0-37	ZL	10YR43						0	0		0							
	37-120	MZCL	10YR53	10YR56	C	F		Y	0	0		0		M					
2	0-36	ZL	10YR43						0	0		0							
	36-56	ZL	10YR53						0	0		0		M					
	56-90	MZCL	10YR53	10YR56	C	F		Y	0	0		0		M					
	90-120	HZCL	10YR54	10YR56	C	F		S	0	0		0		M					Not spl see 3P
3	0-44	ZL	10YR43						0	0		0							
	44-60	MZCL	10YR53	10YR56	C	D		Y	0	0		0		M					
	60-80	MZCL	10YR64	10YR66	C	F		Y	0	0		0		M					Imp 80 dry
4	0-40	ZL	10YR43						0	0		0							
	40-65	ZL	10YR54						0	0		0		M					
	65-120	MZCL	10YR63	10YR56	C	D		Y	0	0		0		M					
5	0-42	ZL	10YR42						0	0		0							
	42-68	ZL	10YR54						0	0		0		M					
	68-120	MZCL	10YR54						0	0		0		M					
6	0-40	ZL	10YR43						0	0		0							
	40-90	MZCL	75YR54						0	0		0		M					
	90-120	MZCL	10YR54	10YR56	C	D		S	0	0		0		M					Sl gleyed
7	0-34	ZL	10YR43						0	0		0							
	34-120	MZCL	10YR54						0	0		0		M					
8	0-33	ZL	10YR43						0	0		0							
	33-120	MZCL	75YR53	75YR56	C	D		Y	0	0		0		M					
9	0-30	ZL	10YR43						0	0		0							
	30-90	MZCL	10YR53	10YR66	C	D		Y	0	0		0		M					
	90-120	ZL	10YR72	10YR56	M	D		Y	0	0		0		M					
10	0-40	ZL	10YR43						0	0		0							
	40-56	ZL	10YR54						0	0		0		M					
	56-68	ZL	10YR53	10YR56	C	F		Y	0	0		0		M					
	68-86	MZCL	10YR53	10YR56	C	D		Y	0	0		0		M					
	86-120	HZCL	10YR53	10YR56	C	D		Y	0	0		0		M					Not spl see 3P
11	0-30	ZL	10YR43						0	0		0							
	30-50	ZL	10YR44						0	0	HR	4		M					
	50-60	MZCL	10YR44						0	0		0		M					
	60-120	MZCL	10YR44	10YR58	C	D		S	0	0		0		M					Sl gleyed
12	0-35	ZL	10YR43						0	0	HR	2							
	35-90	MZCL	10YR44						0	0		0		M					
	90-120	MZCL	10YR44	10YR58	F				0	0		0		M					

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	CALC	
13	0-30	ZL	10YR43						0	0	HR	2							
	30-90	MCL	10YR44						0	0		0		M					
	90-105	SCL	10YR44						0	0		0		M					
	105-120	MSL	10YR44						0	0		0		M					
14	0-35	ZL	10YR43						0	0	HR	2							
	35-50	MZCL	10YR44						0	0		0		M					
	50-85	MZCL	10YR64	10YR58	C	D		Y	0	0		0		M					
	85-120	MCL	10YR63	10YR58	M	D		Y	0	0		0		M					
15	0-30	ZL	10YR43						0	0	HR	2							
	30-45	MZCL	10YR53 63	10YR58	C	D		Y	0	0		0		M					
	45-60	HZCL	10YR53 63	10YR58	C	D		Y	0	0		0		M					
	60-90	C	10YR62 61	10YR58	M	D		Y	0	0		0		P		Y		Prob spl	
	90-120	MCL	10YR62 61	10YR58	M	D		Y	0	0		0		M					
16	0-30	ZL	10YR43						0	0	HR	2							
	30-50	ZL	10YR44						0	0	HR	5		M					
	50-75	MZCL	10YR44						0	0	HR	2		M					
	75-120	MZCL	10YR44	10YR58	C	F		S	0	0		0		M					Sl gleyed
17	0-30	ZL	10YR43						0	0	HR	2							
	30-50	ZL	10YR44						0	0		0		M					
	50-70	MZCL	10YR44						0	0		0		M					
	70-120	MZCL	10YR44	10YR56	C	F		S	0	0		0		M					Sl gleyed
18	0-30	ZL	10YR43						0	0	HR	2							
	30-40	ZL	10YR43						0	0		0		M					
	40-50	MZCL	10YR44						0	0		0		M					
	50-120	HZCL	10YR53	10YR58	M	D		Y	0	0		0		M					Not spl see 3P
19	0-30	ZL	10YR43						0	0	HR	2							
	30-65	ZL	10YR44						0	0	HR	2		M					
	65-75	MZCL	10YR63	10YR58	C	D		Y	0	0		0		M					
	75-120	C	10YR63	10YR58	M	D		Y	0	0		0		P		Y		Prob spl	
20	0-35	MZCL	10YR43						0	0	HR	3							
	35-50	MZCL	10YR53	10YR56	C	D		Y	0	0		0		M					
	50-70	HZCL	10YR62	10YR68	M	D		Y	0	0		0		M					Not spl see 3P
	70-90	HCL	10YR62	10YR58	M	D		Y	0	0		0		M					Not spl see 3P
	90-120	SCL	25Y 61	10YR58	M	D		Y	0	0		0		M					Not spl see 3P
21	0-36	ZL	10YR43						0	0		0							
	36-56	ZL	10YR53	10YR56	C	D		Y	0	0		0		M					
	56-80	ZL	10YR54	10YR56	C	D		S	0	0		0		M					Sl gleyed
	80-120	MZCL	10YR64	10YR56	C	D		Y	0	0		0		M					
22	0-44	ZL	10YR43						0	0		0							
	44-72	ZL	10YR53	10YR56	C	D		Y	0	0		0		M					
	72-84	MZCL	10YR63	10YR56	C	D		Y	0	0		0		M					
	84-120	HZCL	75YR64	75YR56	C	D		Y	0	0		0		M					

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	0-36	ZL	10YR43						0	0		0							
	36-64	ZL	10YR53						0	0		0		M					
	64-84	ZL	10YR53	10YR56	C	D		Y	0	0		0		M					
	84-120	MZCL	10YR64	10YR56	C	D		Y	0	0		0		M					
24	0-38	ZL	10YR43						0	0		0							
	38-52	MZCL	10YR62	10YR56	C	D		Y	0	0		0		M					
	52-76	MZCL	10YR64	10YR56	C	D		Y	0	0		0		M					
	76-120	ZL	10YR71	10YR56	C	D		Y	0	0		0		M					
25	0-27	MZCL	10YR43						0	0		0							
	27-76	MZCL	10YR53	10YR56	C	D		Y	0	0		0		M					
	76-120	MZCL	10YR64	10YR56	C	D		Y	0	0		0		M					
26	0-32	MCL	10YR44						0	0		0							
	32-50	MCL	10YR44 54						0	0		0		M					
	50-70	MCL	10YR54 44	10YR56	C	D		S	0	0		0		M					Sl gleyed
	70-120	MCL	10YR53	10YR58	M	D		Y	0	0		0		M					
27	0-25	HCL	10YR32						0	0		0							
	25-50	C	10YR52	10YR58	M	D		Y	0	0		0		P		Y			Plastic
	50-70	PL	05Y 51	10YR58	C	D		Y	0	0		0		M					Moist
	70-110	MCL	05Y 61	10YR58	C	D		Y	0	0		0		P		Y			Saturated
28	0-38	ZL	10YR42						0	0		0							
	38-60	ZL	10YR63	75YR68	C	D		Y	0	0		0		M					
	60-120	MZCL	75YR64	75YR68	C	D		Y	0	0		0		M					
29	0-28	ZL	10YR42						0	0		0							
	28-78	MZCL	10YR53	10YR56	C	D		Y	0	0		0		M					
	78-120	FSZL	25Y 61	10YR66	C	D		Y	0	0		0		M					
30	0-27	MZCL	10YR43						0	0		0							
	27-54	HZCL	10YR53	10YR56	C	D		Y	0	0		0		M					Not spl see 3P
	54-90	MZCL	10YR71	10YR56	C	D		Y	0	0		0		M					V pale matrix
	90-120	FSZL	25Y 64						0	0		0		M					
31	0-30	MZCL	10YR43						0	0	HR	2							
	30-50	MZCL	10YR53	10YR56	C	F		Y	0	0		0		M					
	50-110	PL	05Y 61	10YR58	C	F		Y	0	0		0		M					Moist
	110-120	MCL	05Y 61	10YR56	C	D		Y	0	0		0		M					Anaerobic;V wet
32	0-28	MZCL	10YR42						0	0		0							
	28-82	MZCL	10YR64	10YR56	C	D		Y	0	0		0		M					
	82-120	FSZL	25Y 72	10YR56	C	D		Y	0	0		0		M					
33	0-28	HZCL	10YR42	10YR58	F				0	0		0							
	28-45	HCL	10YR53	10YR58	C			Y	0	0	HR	2		P		Y			Alluvial see 1P
	45-100	HCL	05Y 41 51	10YR58	M			Y	0	0		0		P		Y			Alluvial see 1P
	100-120	MSL	25Y 53	10YR58	M			Y	0	0	HR	20		M					Saturated

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	0-35	MZCL	10YR43						0	0	HR	2							
	35-50	OMZCL	10YR41	10YR56	C			Y	0	0		0		M					Organic
	50-90	PL	25Y 31					Y	0	0		0		M					Moist
	90-120	HCL	05Y 61 51	10YR58	C			Y	0	0		0		P		Y			Saturated
35	0-22	HCL	10YR32						0	0		0							
	22-120	HZCL	25Y 61	10YR56	M	D		Y	0	0		0		P		Y			Alluvial see 1P
36	0-29	HCL	10YR32						0	0		0							
	29-80	MZCL	10YR53	10YR56	M	D		Y	0	0		0		M					Plastic
	80-120	MSZL	25Y 53 51						0	0		0		M					Saturated
37	0-38	MZCL	10YR43						0	0		0							
	38-80	MZCL	75YR44						0	0		0		M					
	80-120	HZCL	75YR54						0	0		0		M					
38	0-38	MZCL	10YR43						0	0		0							
	38-85	MZCL	10YR54						0	0		0		M					
	85-120	HZCL	75YR54						0	0		0		M					
39	0-20	MZCL	10YR32						0	0		0							
	20-60	MZCL	05Y 53	10YR66	C	D		Y	0	0		0		P		Y			Disturbed
40	0-38	MZCL	10YR53	10YR56	C	D		Y	0	0		0							
	38-76	MZCL	10YR53	10YR56	M	D		Y	0	0		0		M					
	76-120	MZCL	10YR63	10YR56	C	D		Y	0	0		0		M					
41	0-33	MZCL	10YR42	10YR66	C	D		Y	0	0		0							
	33-50	MZCL	10YR53	10YR66	C	D		Y	0	0		0		M					
	50-120	MZCL	10YR54	10YR66	C	D		S	0	0		0		M					Sl. gleyed
42	0-28	MZCL	10YR42						0	0		0							
	28-72	HZCL	25Y 61	10YR56	M	D		Y	0	0		0		P		Y			} Alluvial
	72-90	ZL	25Y 71	10YR56	C	D		Y	0	0		0		M					} soils
1P	0-25	MCL	10YR32	10YR58	F	F		N	0	0		0	MDSAB	FR					
	25-45	HCL	10YR53	10YR56 58	C	D		Y	0	0	HR	2	MDCAB	FM	P	Y	Y	Y	} Alluvial
	45-60	HZCL	05Y 41	10YR58	M	D		Y	0	0		0	MDCAB	FM	P	Y	Y		} and
	60-95	HZCL	05Y 61 51	10YR58	M	D		Y	0	0		0	MDCPR	FM	P	Y	Y		} plastic
	95-120	LMS	10GY 6	10YR58	M	D		Y	0	0	HR	30		M					Saturated
2P	0-30	MZCL	10YR43						0	0	HR	2							Borderline zl
	30-45	MZCL	10YR44						0	0		0	MDCSAB	FR	M				
	45-90	MZCL	10YR44						0	0		0	MDCSAB	FR	M				
	90-120	MZCL	10YR44	10YR56 58	C			S	0	0		0	MDCSAB	FR	M				
3P	0-30	MZCL	10YR43						0	0	HR	3							
	30-50	MZCL	10YR53	10YR58	C	D		Y	0	0		0	MDCSAB	FR	M				
	50-75	HZCL	10YR62	10YR56 58	C	D		Y	0	0		0	MDCSAB	FR	M				Friable - not spl
	75-85	HCL	10YR62	10YR56 58	M	D	10YR43	Y	0	0		0	MDCSAB	FR	M				Friable - not spl
	85-120	SCL	25Y 61 62	10YR58	M	D		Y	0	0		0	MDCSAB	FR	M				Friable - not spl