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Canterbury District Local Plan
CAN 23: Land at Hode Farm,
Agricultural Land Classification
ALC Map and Report
June 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

CANTERBURY DISTRICT LOCAL PLAN CAN 23: LAND AT HODE FARM

1. Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Canterbury district of Kent. The work forms part of MAFF's statutory input to the Canterbury District Local Plan.
- 1.2 CAN 23 comprises approximately 107 hectares of land to the north of the A2 near the village of Bridge, which is situated to the east of Canterbury in Kent. An additional area of land, totalling approximately 16 hectares, was surveyed to the west of the local plan site in order to provide information on land quality up to the boundary of a previous ALC survey. An Agricultural Land Classification (ALC) survey was carried out during June 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 113 borings and four 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 a long term limitation on its use for agriculture.
- 1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.
- 1.4 At the time of survey the agricultural land on the site comprised cereals, linseed, maize, orchards and strawberries. Areas marked as urban on the map include private dwellings and tarmac roads. An area of scrubland has been mapped as non-agricultural, areas of woodland have also been mapped on the site. A packing station has been mapped as agricultural buildings. A field behind Hode Farm was not surveyed in order to avoid damaging the plastic mulches covering the soil.
- 1.5 The distribution of grades and subgrades for the total area surveyed is shown on the attached ALC map and the areas and extent are given in Table 2 below. Table 1 gives the areas and extent for the land included in the local plan site. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades for Local Plan site

Grade	Area (ha)	% of Site	% of Agricultural Land
1	51.3	47.7	54.9
2	18.8	17.5	20.1
3a	10.0	9.3	10.8
3b	13.3	12.4	<u>14.2</u>
Urban	7.1	6.6	100% (93.4 ha.)
Non-agricultural	0.4	0.4	
Woodland	3.5	3.2	
Agricultural Buildings	0.3	0.3	
Not surveyed	<u>2.8</u>	<u>2.6</u>	
Total area of site	107.5	100%	

Table 2 : Distribution of Grades and Subgrades for total area surveyed.

Grade	Area (ha)	% of Site	% of Agricultural Land
1	56.1	45.3	52.0
2	27.0	21.8	25.0
3a	10.0	8.0	9.4
3b	14.7	11.9	<u>13.6</u>
Urban	7.7	6.2	100% (107.8 ha.)
Non-agricultural	0.4	0.3	
Woodland	4.9	4.0	
Agricultural Buildings	0.3	0.2	
Not surveyed	<u>2.8</u>	<u>2.3</u>	
Total area surveyed	123.9	100%	

- 1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.
- 1.7 The majority of the agricultural land on the site has been classified as Grade 1, excellent quality land. Soils within this mapping unit are developed from brickearth and typically comprise a silt loam topsoil overlying medium silty clay loam subsoils. Profiles are well drained and contain sufficient amounts of profile available water to support a wide range of crops producing consistently high yields.
- 1.8 Very good quality Grade 2 land is mapped towards the west of the site where textures differ slightly to those of the Grade 1 mapping unit. Topsoils tend to comprise medium silty clay loams with either similarly textured subsoils or subsoils which become heavier with depth passing into either heavy silty clay loams or clays. Chalk was observed deep in the profile at a limited number of observations, and occasionally a small amount of flints in the subsoils caused the profile to be impenetrable to the auger at depths of approximately 60cm. Overall, soils within this mapping unit have a slight restriction upon profile available water for plant growth. This can have an effect upon the level and consistency of crop yields such that a classification of Grade 2 is appropriate due to this minor droughtiness limitation. Furthermore, a number of profiles within this mapping unit showed signs of a slight drainage imperfection. In these cases, a classification of Grade 2 due to a soil wetness limitation is also applicable.
- 1.9 Towards the north-west of the site an area of land has been classified as Subgrade 3a, good quality land, with soil droughtiness as the main limitation. Subsoils tend to be more stony than elsewhere on the site, with a large number of soil augerings proving to be impenetrable at variable depths within the subsoil. Information from an adjacent survey (ADAS Ref: 2002/008/93) suggests that the stony subsoils cause a moderate restriction upon profile available water for plant growth. Consequently, the effect that this may have upon the level and consistency of crop yields results in a classification of Subgrade 3a.
- 1.10 Approximately 15 hectares of the agricultural land surveyed has been classified as Subgrade 3b, moderate quality land, with topsoil stoniness and soil wetness as the main limitations. Towards the north-east of the site topsoil stone measurements found the percentage of stones larger than 2cm in the topsoil to exceed 15%. This is sufficient to cause a significant topsoil stoniness limitation as excessively stony topsoils can inhibit

crop establishment and may increase production costs due to increased wear and tear on machinery and tyres.

- 1.11 The area of land mapped as Subgrade 3b towards the western boundary shows a significant soil wetness limitation. Within this mapping unit medium silty clay loam topsoils tend to overlie slowly permeable clay subsoils. Such profiles are assigned to Wetness Class IV with a resultant classification of Subgrade 3b. Poorly drained wet soils can inhibit plant and root development, and may be more susceptible to structural damage through trafficking by agricultural machinery or poaching by grazing livestock.

2. Climate

- 2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe climatic limitations will restrict land to low grades irrespective of favourable site or soil conditions.
- 2.2 The main parameters used in the assessment of an overall climatic limitation are average annual 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 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. At this location, the field capacity days are relatively low in a regional context and therefore the likelihood of any soil wetness problems may be decreased.
- 2.5 No local climatic factors such as exposure or frost risk are believed to affect the site.

Table 2 : Climatic Interpolations

Grid Reference	TR 175 554	TR 175 565
Altitude (m)	55	40
Accumulated Temperature (Day °C, Jan-June)	1435	1451
Average Annual Rainfall (mm)	705	688
Field Capacity (days)	145	142
Moisture Deficit, Wheat (mm)	115	117
Moisture Deficit, Potatoes (mm)	110	113
Overall Climatic Grade	1	1

3. Relief

- 3.1 The majority of the site is relatively flat, lying at an altitude of approximately 50-55m AOD. Towards the north-west of the site, there is a shallow dry valley feature lying at an altitude of 30-45m AOD. Nowhere on the site do altitude or relief pose any limitation to agricultural use.

4. Geology and Soils

- 4.1 The published geological map (BGS, 1982) shows the underlying geology of the site to be relatively complex. The majority of the site is shown as head brickearth. An area of Upper Chalk and associated clay-with-flints are mapped towards the south-western corner of the site. An area of river terrace gravels is shown in the north of the site, with a strip of Thanet Beds running along the north-western edge.
- 4.2 The published Soil Survey map (SSEW, 1983) shows the soils over the majority of the site to comprise those of the Hamble 1 association. These are described as 'deep well drained often stoneless fine silty soils. Some similar soils affected by groundwater and some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some shallower soils over chalk' (SSEW 1983). A small area of soils of the Sonning 1 association are also mapped on the site. These are described as 'well drained flinty coarse loamy and sandy soils, mainly over gravel. Some coarse loamy and clayey soils with slowly permeable subsoils and slight seasonal waterlogging' (SSEW, 1983).
- 4.3 Detailed field examination broadly confirms the published map. The majority of the site was found to comprise deep, stoneless and well drained silty soils. Soils towards the north of the site were found to be appreciably more stony than elsewhere. A small area of poorly drained loamy soils with slowly permeable subsoils were observed towards the west of site, as were isolated patches of soils formed over chalk.

5. Agricultural Land Classification

- 5.1 The location of the soil observation points are shown on the attached sample point map.

Grade 1

- 5.2 Excellent quality land is mapped across the majority of the site, where soils were found to be deep and silty in nature. Two soil inspection pits within this mapping unit (pits 1 and 3) found profiles to typically comprise very slightly stony (2-4% total flints) silt loam topsoils resting upon stoneless medium silty clay loam upper and lower subsoils. Profiles were found to be well drained, there being no evidence of impeded drainage or high groundwater levels, and are therefore assigned to Wetness Class I. Assessments of subsoil structure made at the pits found subsoils to be moderately structured. The soil properties in this mapping unit means that even though the local climate is relatively dry, there are still adequate reserves of profile available water to support a wide range of crops with consistently high yields. Therefore, as this land shows no limitation to agricultural use a classification of Grade 1 is appropriate.

Grade 2

- 5.3 Very good quality land predominates in the south-west of the site, with small areas mapped towards the north-west. Soils in this mapping unit tend to comprise medium silty clay loam topsoils resting upon subsoils which are variable in nature, reflecting the differing geological types which are present. Subsoils typically become moderately stony with depth, comprising medium silty clay loams which can become heavier with depth, overlying clay at depth. Soil inspection pit no. 4 was dug to investigate the nature the

subsoils. At the location of the pit, a slightly stony (5% total flints) medium silty clay loam topsoil was found to overlie a similarly textured upper subsoils containing 3% total flints, extending to a depth of 60cm. A moderately stony (10% total flints) heavy silty clay loam lower subsoil was observed to a depth of 70cm, resting upon a clay. The stone content of the clay varies, containing 15% total flints to a depth of 84cm and 20% total flints below this. The clay show signs of a wetness imperfection in the form of slight gleying, yet the profile can still be assigned to Wetness Class I. A droughtiness calculation for the described pit profile shows there to be a slight restriction upon the amount of profile available water for crop growth. This can affect the level and consistency of crop yields, such that a classification of Grade 2 is appropriate. Elsewhere in this mapping unit, profiles show a similar droughtiness limitation.

- 5.4 Occasionally, soils proved impenetrable to the auger at depths of between 45-60cm. This may be attributed to the varying subsoil stone contents and dry soil conditions at the time of survey. Yet deeper neighbouring soil augerings suggests that a classification of Grade 2 is also appropriate in these cases.
- 5.5 Isolated incidence of a gleyed and slowly permeable clay lower subsoil observed in this mapping unit, means that some profiles are assigned to Wetness Class II with a resultant classification of Grade 2. In such cases, a classification of Grade 2 due to both a soil wetness and droughtiness limitation is appropriate.

Subgrade 3a

- 5.6 A band of good quality land is mapped in the north of the site. Soils within this mapping unit typically comprise silt loam or medium silty clay loam topsoils resting upon medium silty clay loam upper subsoils which can become heavier with depth. Topsoils are variably stony, occasionally containing moderate (10-15% total, 3-6% >2cm in size) amounts of flints. Some of the subsoils in this mapping unit proved impenetrable to the auger at depths of between 35-60cm. This may be attributed to the presence of increased volumes of stones in these subsoils. Where soil augerings proved impenetrable, soils information from a neighbouring survey (ADAS Ref: 4203/008/93) has been used for the purposes of land classification. Information from a pit on this site suggests that the stone contents of the soil resource below the impenetrable depths, result in a moderate restriction upon the amount of profile available water for plant growth. This in turn can affect the level and consistency of crop yields, such that a classification of Subgrade 3a is appropriate due to this droughtiness limitation.
- 5.7 A limited number of soil observations within this mapping unit found less stony and therefore higher quality land. However, their extent is insufficient to warrant mapping as a separate unit.

Subgrade 3b

- 5.8 Two units of moderate quality land are mapped on the site. In the north-east of the site, topsoils are excessively stony. Topsoil stone measurements found the volume of total flints in the topsoil to range between 25-35%. Of these, 16-23% were found to be greater than 2cm in size (5-16% being greater than 6cm in size) which is sufficient to cause a significant limitation upon agricultural use. The main effect of hard stones are to act as an impediment to cultivation, harvesting and crop growth and to cause a reduction in the available water capacity of the soil. As well as the aforementioned increase in production

costs, crop quality may also be reduced in stony soil by causing, for example, the distortion of root crops or bruising of potatoes during harvesting. Stones can also impair crop establishment by causing reduced plant populations in precision-drilled crops.

- 5.9 Within the Subgrade 3b mapping unit in the west of the site, soil wetness tends to be the main limitation. Soil profiles within this mapping unit typically comprise moderately stony (15-18% total flints) medium silty clay loams resting upon clays. A soil inspection pit (pit no.2) showed the clay subsoil commencing at 29cm to be poorly structured and slowly permeable, causing a drainage impedance. Profiles show evidence of a drainage imperfection in the form of gleying from the topsoil. Such drainage characteristics equate these soils to Wetness Class IV, with a resultant classification of Subgrade 3b. Excessively wet soils can affect plant growth and rooting. Soil wetness also influences the sensitivity of the soil to structural damage through and is therefore a major factor in determining the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

ADAS Ref: 2002/095/95
MAFF Ref: EL 20/642

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1982), Sheet No. 289, Canterbury, 1:50,000 Series (solid and drift edition).

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

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

APPENDIX I

DESCRIPTION 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 (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 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 including: 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. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

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.

Definition of Soil Wetness Classes

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.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

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

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

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

Soil Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

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

- GRID REF** : national 100 km grid square and 8 figure grid reference.
- 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		
- GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.
- GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.
- AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
- MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)
- DRT** : Best grade according to soil droughtiness.
- 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		
- 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 : CANTERBURY LP CAN 23 Pit Number : 1P

Grid Reference: TR18105580 Average Annual Rainfall : 702 mm
 Accumulated Temperature : 1440 degree days
 Field Capacity Level : 145 days
 Land Use : Ploughed
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	ZL	10YR43 00	2	4	HR					
29- 60	MZCL	10YR56 54	0	0			MDCSAB	FR	M	
60-120	MZCL	10YR56 00	0	0			MDCSAB	FR	M	

Wetness Grade : 1 Wetness Class : I
 Gleying : cm
 SPL : No SPL

Drought Grade : 1 APW : 170mm MBW : 54 mm
 APP : 134mm MBP : 23 mm

FINAL ALC GRADE : 1
 MAIN LIMITATION :

SOIL PIT DESCRIPTION

Site Name : CANTERBURY LP CAN 23 Pit Number : 2P

Grid Reference: TR17495662 Average Annual Rainfall : 702 mm
 Accumulated Temperature : 1440 degree days
 Field Capacity Level : 145 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MZCL	10YR32 00	11	18	HR	C				
29- 60	C	10YR62 00	0	2	HR	M	WK CPR	FM	P	

Wetness Grade : 3B Wetness Class : IV
 Gleying : 0 cm
 SPL : 029 cm

Drought Grade : 3B APW : 79 mm MBW : -37 mm
 APP : 85 mm MBP : -26 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : CANTERBURY LP CAN 23 Pit Number : 3P

Grid Reference: TR17705600 Average Annual Rainfall : 702 mm
 Accumulated Temperature : 1440 degree days
 Field Capacity Level : 145 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 27	ZL	10YR42 53	0	2	HR					
27- 45	MZCL	10YR54 56	0	0			MDCSAB	FR	M	
45- 90	MZCL	10YR54 00	0	0			MDCPR	FR	M	
90-120	MZCL	10YR54 64	0	0			MDCAB	FR	M	

Wetness Grade : 1 Wetness Class : I
 Gleying : cm
 SPL : No SPL

Drought Grade : 1 APW : 170mm MBW : 54 mm
 APP : 134mm MBP : 23 mm

FINAL ALC GRADE : 1
 MAIN LIMITATION :

SOIL PIT DESCRIPTION

Site Name : CANTERBURY LP CAN 23 Pit Number : 4P

Grid Reference: TR17305540 Average Annual Rainfall : 702 mm
 Accumulated Temperature : 1440 degree days
 Field Capacity Level : 145 days
 Land Use :
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT. STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 24	MZCL	10YR42 53	3	5	HR					
24- 60	MZCL	10YR54 00	0	3	HR		MDCSAB	FR	M	
60- 70	HZCL	10YR56 00	0	10	HR		MDCSAB	FR	M	
70- 84	C	75YR54 00	0	15	HR	C				M
84-120	C	75YR54 00	0	20	HR	C				M

Wetness Grade : 1 Wetness Class : I
 Gleying : S70 cm
 SPL : No SPL

Drought Grade : 2 APW : 138mm MBW : 22 mm
 APP : 118mm MBP : 7 mm

FINAL ALC GRADE : 2
 MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--			-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYS	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	TR17605660	CER E	02			1	1	157	41	121	10	1			DR 2	
1P	TR18105580	PLO				1	1	170	54	134	23	1			1	
2	TR17705660	LIN NW	05	028		2	2	154	38	118	7	2			WD 2	
2P	TR17495662	MAZ			0 029	4	3B	79	-37	85	-26	3B			WE 3B	
3	TR17805660	LIN NW	05	030		2	1	53	-63	53	-58	4			ST 3B	
3P	TR17705600	MAZ				1	1	170	54	134	23	1			1	
4	TR17905660	LIN				1	1	41	-75	41	-70	4			ST 3B	IMP 35
4P	TR17305540	ORC		S70		1	1	138	22	118	7	2			DR 2	CHALKYH5
5	TR17405650	CER				1	1	76	-40	76	-35	3B			DR 3A	IMP 45
6	TR17505650	CER NW	03			1	1	149	33	112	1	2			DR 2	
7	TR17605650	CER NE	03	028	028	4	3B	81	-35	87	-24	3B			WE 3B	SEE 2P
8	TR17705650	LIN NW	02	025	025	4	3B	80	-36	86	-25	3B			WE 3B	SEE 2P
9	TR17805650	LIN				1	1	52	-64	52	-59	4			ST 3B	
10	TR17905650	LIN				1	1	61	-55	61	-50	4			ST 3B	
11	TR18005650	LIN				1	1	55	-61	55	-56	4			ST 3B	
12	TR17305640	CER				1	1	100	-16	110	-1	3A			DR 2	
13	TR17405640	WHT W	04			1	1	67	-49	67	-44	3B			DR 3A	IMP 35
14	TR17505640	WHT				1	1	71	-45	71	-40	3B			DR 3A	IMP 48
15	TR17605640	CER NE	02			1	1	154	38	118	7	2			DR 2	
16	TR17705640	LIN SW	03	000	025	4	3B	78	-38	84	-27	3B			WE 3B	SEE 2P
17	TR17805640	LIN				1	1	52	-64	52	-59	4			ST 3B	
19	TR18005640	LIN S	01	030		2	2	154	38	119	8	2			WD 2	
20	TR17405630	WHT W	02	025	25	4	3B	127	11	104	-7	2			WE 3B	SEE 2P
21	TR17505630	WHT		075		1	1	141	25	133	22	2			DR 2	IMP 95
22	TR17605630	CER		045		1	1	91	-25	97	-14	3B			DR 3A	IMP 60
23	TR17705630	CER NE	02			1	1	158	42	122	11	1			1	
25	TR17905632	LIN				1	1	50	-66	50	-61	4			ST 3B	
26	TR17505620	WHT		025		2	2	69	-47	69	-42	3B			DR 3A	IMP 35
27	TR17605620	CER				1	1	58	-58	58	-53	4			DR 3B	IMP 35
30	TR17835619	LIN		025	025	4	3B	71	-45	77	-34	3B			ST 3B	IMP 35
31	TR17615614	LIN		027		2	2	65	-51	65	-46	4			DR 3A	IMP 40
32	TR17705610	LIN N	02			1	1	170	54	134	23	1			1	
33	TR17805610	LIN				1	1	70	-46	70	-41	3B			ST 3B	
36	TR17705600	MAZ				1	1	169	53	133	22	1			1	
37	TR17805600	FRT				1	1	168	52	132	21	1			1	
40	TR17805590	FRT				1	1	169	53	133	22	1			1	
42	TR18005590	CER				1	1	169	53	133	22	1			1	
43	TR18105590	CER				1	1	172	56	136	25	1			1	
44	TR17305580	CER				1	1	158	42	123	12	1			1	
45	TR17405580	CER				1	1	86	-30	86	-25	3B			DR 2	IMP 50
46	TR17805580	CER				1	1	169	53	133	22	1			1	
48	TR18005580	PLO				1	1	166	50	130	19	1			1	

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
				GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB					
49	TR18105580	PLO			1	1	171	55	135	24	1				1	
50	TR18205580	CER			1	1	171	55	135	24	1				1	
51	TR18305580	CER			1	1	172	56	136	25	1				1	
52	TR17105570	ORC		S55 055	2	2	138	22	116	5	2			WD	2	
53	TR17205570	CER			1	1	95	-21	101	-10	3B			DR	2	IMP 60
54	TR17305570	CER			1	1	155	39	120	9	2			DR	2	
55	TR17405570	CER			1	1	151	35	119	8	2			DR	2	
56	TR17705570	CER			1	1	166	50	130	19	1				1	
57	TR17805570	LEY			1	1	161	45	125	14	1				1	
58	TR17905570	LEY			1	1	160	44	124	13	1				1	
59	TR18005570	PLO			1	1	171	55	135	24	1				1	
60	TR18105570	PLO			1	1	172	56	136	25	1				1	
61	TR18205570	CER			1	1	169	53	133	22	1				1	
62	TR18305570	CER			1	1	169	53	133	22	1				1	
63	TR18405570	CER	SE	02	1	1	172	56	136	25	1				1	
64	TR17105560	ORC		S26 026	3	2	103	-13	105	-6	3A			WD	2	
65	TR17205560	ORC		S60 060	2	2	139	23	117	6	2			WD	2	
66	TR17305560	CER			1	1	146	30	116	5	2			DR	2	
67	TR17405560	CER			1	1	152	36	121	10	1				1	
68	TR17505560	CER		S95 095	1	1	156	40	130	19	1				1	
69	TR17705560	PLO			1	1	169	53	133	22	1				1	
70	TR17805560	LEY			1	1	169	53	132	21	1				1	
71	TR17905560	CER			1	1	171	55	135	24	1				1	
72	TR18005560	FRT			1	1	170	54	134	23	1				1	
73	TR18105560	PLO			1	1	171	55	135	24	1				1	
74	TR18205560	FRT			1	1	169	53	133	22	1				1	
75	TR18305560	CER			1	1	171	55	135	24	1				1	
76	TR18405560	CER	SE	02	1	1	171	55	135	24	1				1	
77	TR18505560	CER	SE	03	1	1	160	44	124	13	1				1	
78	TR17205550	ORC		S60	1	1	159	43	123	12	1				1	
79	TR17305550	ORC			1	1	156	40	121	10	1				1	
80	TR17405550	ORC			1	1	156	40	121	10	1				1	
81	TR17505550	LEY		S26 026	3	3A	91	-25	102	-9	3B			WD	3A	IMP 70
82	TR17605550	LEY			1	1	160	44	124	13	1				1	
83	TR17705550	LEY		S26	1	1	159	43	123	12	1				1	
84	TR17805550	LEY			1	1	158	42	122	11	1				1	
85	TR17905550	CER			1	1	176	60	140	29	1				1	
86	TR18005550	FRT			1	1	168	52	131	20	1				1	
87	TR18105550	CER			1	1	171	55	135	24	1				1	
88	TR18205550	CER			1	1	172	56	136	25	1				1	
89	TR18305550	FRT	SE	02	1	1	169	53	135	24	1				1	
90	TR17305540	ORC			1	1	149	33	119	8	2			DR	2	

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRONT	GLEY SPL	CLASS	GRADE	AP	MB	AP	MB					
1	TR17405540	LEY			1	1	105	-11	104	-7	3A		DR	3A	
2	TR17505540	LEY		S55 055	2	2	146	30	115	4	2		WD	2	
93	TR17605540	PLO			1	1	159	43	123	12	1			1	
94	TR17705540	PLO			1	1	169	53	133	22	1			1	
95	TR17805540	FRT			1	1	169	53	133	22	1			1	
96	TR17905540	FRT			1	1	172	56	136	25	1			1	
97	TR18005540	FRT			1	1	169	53	133	22	1			1	
98	TR18105540	CER			1	1	170	54	134	23	1			1	
99	TR18205540	CER	SE	01	1	1	171	55	135	24	1			1	
100	TR17505530	PLO			1	1	165	49	130	19	1			1	
101	TR17605530	PLO		S75	1	1	169	53	133	22	1			1	
102	TR17705530	PLO			1	1	168	52	132	21	1			1	
103	TR17805530	FRT			1	1	169	53	133	22	1			1	
104	TR17905530	FRT			1	1	167	51	131	20	1			1	
105	TR18005530	LEY			1	1	159	43	123	12	1			1	
106	TR18105530	LEY			1	1	170	54	134	23	1			1	
107	TR18005520	LEY			1	1	99	-17	106	-5	3A		DR	3A	I62 CHALK
108	TR18105520	LEY			1	1	108	-8	116	5	3A		DR	3A	I70 CHALK
109	TR17505590	BAR		S26	2	2	87	-29	87	-24	3B		DR	2	IMP 50
110	TR17605580	BAR		S55 080	2	2	141	25	118	7	2		DR	2	
111	TR17505580	BAR			1	1	94	-22	100	-11	3B		DR	2	IMP 60
112	TR17445686	BAR		S25	2	2	68	-48	68	-43	3B		DR	3A	IMP 40
113	TR17605570	PLO			1	1	168	52	132	21	1			1	
114	TR17605560	FRT		S75 075	2	2	155	39	133	22	1		WE	2	
115	TR11705570	BAR			1	1	147	31	132	21	1			1	IMP 100
116	TR17605590	PLO			1	1	170	54	134	23	1			1	
117	TR11705600	PLO			1	1	171	55	135	24	1			1	
118	TR17405600	ORC			1	1	116	0	110	-1	3A		DR	2	IMP 90
119	TR17405610	ORC		065 065	2	2	113	-3	106	-5	3A		WD	2	IMP 100
120	TR17505610	MAZ		024 036	4	3B	103	-13	101	-10	3A		WE	3B	SEE 2P
121	TR17495600	MAZ		000 026	4	3B	107	-9	99	-12	3A		WE	3B	SEE 2P
122	TR17525600	MAZ		S55	1	1	122	6	117	6	2		DR	2	IMP 90
123	TR17715592	MAZ			1	1	168	52	132	21	1		DR	2	

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----			STRUCT/	SUBS	CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH				TOT
1	0-30	mzc1	10YR43 00						2	0	HR	5			
	30-50	mzc1	10YR54 00						0	0	HR	5		M	
	50-120	mzc1	10YR54 56						0	0		0		M	
1P	0-29	z1	10YR43 00						2	0	HR	4			
	29-60	mzc1	10YR56 54						0	0		0	MDCSAB	FR	M
	60-120	mzc1	10YR56 00 09						0	0		0	MDCSAB	FR	M
2	0-28	mzc1	10YR43 00						2	0	HR	8			
	28-60	mzc1	10YR53 54	10YR56	00	C		Y	0	0	HR	5		M	
	60-120	hzc1	10YR56 00	10YR56	00	C		Y	0	0		0		M	
2P	0-29	mzc1	10YR32 00	75YR46	00	C		Y	11	0	HR	18			
	29-60	c	10YR62 00	10YR68	71	M		Y	0	0	HR	2	WKCP	FR	P
3	0-30	mc1	10YR42 00						17	6	HR	30			
	30-35	hc1	10YR53 00	75YR56	62	M		Y	0	0	HR	30		M	
3P	0-27	z1	10YR42 53						0	0	HR	2			
	27-45	mzc1	10YR54 56						0	0		0	MDCSAB	FR	M
	45-90	mzc1	10YR54 00						0	0		0	MDCPR	FR	M
	90-120	mzc1	10YR54 64						0	0		0	MDCAB	FR	M
4	0-25	mc1	10YR32 42						23	16	HR	35			
	25-35	mc1	10YR54 00						0	0	HR	35		M	IMPEN 35 FLINTS
4P	0-24	mzc1	10YR42 53						3	0	HR	5			
	24-60	mzc1	10YR54 00						0	0	HR	3	MDCSAB	FR	M
	60-70	hzc1	10YR56 00						0	0	HR	10	MDCSAB	FR	M
	70-84	c	75YR54 00	10YR68	00	C	00MNO0	00	S	0	0	HR	15		M
	84-120	c	75YR54 00	10YR68	00	C	00MNO0	00	S	0	0	HR	20		M
5	0-25	mzc1	10YR43 00						2	0	HR	5			
	25-40	mzc1	10YR54 00						0	0	HR	5		M	
	40-45	mzc1	10YR54 00						0	0	HR	25		M	IMPEN 45 FLINTS
6	0-25	mzc1	10YR43 00						6	0	HR	12			
	25-60	mzc1	10YR54 00						0	0	HR	12		M	
	60-120	hzc1	10YR56 00						0	0		0		M	
7	0-28	c	25Y 42 00						1	0	HR	5			
	28-60	c	25Y 51 00	10YR68	00	M		Y	0	0		0		P	Y
8	0-25	mzc1	10YR32 00						5	2	HR	15			
	25-60	c	25Y 51 00	75YR56	00	M		Y	0	0		0		P	Y
9	0-25	z1	10YR42 00						18	8	HR	35			TOPSOIL
	25-35	z1	10YR42 00						0	0	HR	40		M	STONES

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED		-----STONES-----				STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		STR	POR	IMP	SPL	CALC
10	0-30	z1	10YR32 42						20	8	HR	30						TOPSOIL
	30-40	mzc1	10YR54 00						0	0	HR	30		M			STONES	
11	0-30	mzc1	10YR43 00						16	1	HR	20					TOPSOIL	
	30-35	mzc1	10YR54 00						0	0	HR	25		M			STONES	
12	0-25	mzc1	10YR43 00						3	0	HR	5						
	25-65	mzc1	10YR54 00						0	0	HR	5		M			IMPEN 65 FLINTS	
13	0-25	z1	10YR42 00						3	0	HR	8						
	25-35	mzc1	10YR54 00						0	0	HR	20		M			IMPEN 35 FLINTS	
14	0-25	mzc1	10YR42 00						3	0	HR	15						
	25-48	mzc1	10YR53 00	00MN00	00	C			0	0	HR	25		M			IMPEN 48 FLINTS	
15	0-28	mzc1	10YR43 00						5	0	HR	10						
	28-50	mzc1	10YR54 00						0	0	HR	5		M				
	50-120	mzc1	10YR54 00						0	0		0		M				
16	0-25	mzc1	10YR32 00	10YR56 00	C			Y	12	6	HR	20						
	25-60	c	25Y 51 00	75YR56 00	M			Y	0	0		0		P		Y		
17	0-30	z1	10YR42 00						22	12	HR	35						
	30-35	mzc1	10YR54 00						0	0	HR	35		M				
19	0-30	mzc1	10YR43 00						4	0	HR	10					Y	
	30-45	mzc1	10YR53 00	10YR58 00	C			Y	0	0	HR	2		M				
	45-80	hzc1	10YR53 00	75YR56 62	M			Y	0	0		0		M				
	80-120	hzc1	10YR53 00	75YR56 62	M			Y	0	0	HR	2		M				
20	0-25	mzc1	10YR42 00						0	0	HR	5						
	25-90	c	25Y 62 00	10YR58 00	M			Y	0	0		0		P		Y		
	90-120	c	25Y 51 52	10YR58 00	M			Y	0	0		0		P		Y		
21	0-25	z1	10YR43 53						0	0	HR	5						
	25-40	z1	10YR53 00	10YR58 00	F				0	0	HR	15		M				
	40-75	mzc1	10YR53 00	10YR58 00	F				0	0	HR	3		M				
	75-90	hzc1	25Y 53 00	10YR58 00	M		00MN00	00	Y	0	0	HR	10		M			
	90-95	zc	25Y 53 00	10YR58 00	M				Y	0	0	HR	20		M		IMPEN 95 FLINTS	
22	0-29	mzc1	10YR43 00						5	1	HR	10					Y	
	29-45	mc1	10YR54 00						0	0	HR	5		M			Y	
	45-60	hc1	10YR53 54	75YR56 72	C			Y	0	0	HR	5		M		Y	IMPEN 60 FLINTS	
23	0-25	mzc1	10YR43 00						2	0	HR	4						
	25-60	mzc1	10YR54 00						0	0	HR	1		M				
	60-120	mzc1	10YR54 56						0	0		0		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS						
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	POR	IMP	SPL	CALC
25	0-25	z1	10YR42 00					23	12	HR	35							TOPSOIL
	25-35	mzc1	10YR54 00					0	0	HR	35		M					STONES
26	0-25	z1	10YR53 00					0	0	HR	5							
	25-35	mzc1	10YR53 00	10YR56 00	C			Y	0	0	HR	15		M				IMPEN 35 FLINTS
27	0-30	mzc1	10YR43 00					6	1	HR	12							Y
	30-35	mzc1	10YR54 00					0	0	HR	15		M					Y
30	0-25	mc1	10YR42 00					18	8	HR	25							Y
	25-35	c	25Y 52 00	75YR56 00	M			Y	0	0	HR	25		P			Y	TOPSOIL STONES
	35-60	c	25Y 52 00	75YR56 00	M			Y	0	0		0		P			Y	Y
31	0-27	mzc1	10YR42 00					5	0	HR	10							Y
	27-40	mc1	10YR53 00	10YR58 00	M			Y	0	0	HR	10		M				Y
32	0-28	z1	10YR43 00					2	0	HR	3							
	28-50	mzc1	10YR54 56					0	0		0		M					
	50-120	mzc1	10YR56 00					0	0		0		M					
33	0-30	z1	10YR42 00					22	12	HR	30							
	30-45	mzc1	10YR54 00					0	0	HR	20		M					TOPSOIL STONES
36	0-26	z1	10YR53 52					0	0	HR	2							
	26-120	mzc1	10YR54 56					0	0		0		M					
37	0-24	z1	10YR53 43					0	0	HR	2							
	24-55	mzc1	10YR54 00					0	0		0		M					
	55-120	mzc1	10YR56 00					0	0		0		M					
40	0-26	z1	10YR53 00					0	0	HR	2							
	26-65	mzc1	10YR54 00					0	0		0		M					
	65-120	mzc1	10YR56 00					0	0		0		M					
42	0-25	z1	10YR43 00					0	0	HR	1							
	25-55	mzc1	10YR43 56					0	0		0		M					
	55-120	mzc1	10YR56 00					0	0	HR	1		M					
43	0-30	z1	10YR43 00					0	0	HR	1							
	30-70	mzc1	10YR54 00					0	0	HR	1		M					
	70-120	mzc1	10YR54 00	10YR63 00	F	00MN00 00		0	0		0		M					
44	0-25	mzc1	10YR53 00					0	0	HR	3							Y
	25-80	mzc1	10YR54 00					0	0		0		M					
	80-120	mzc1	10YR56 00					0	0	HR	3		M					
45	0-25	mzc1	10YR43 00					0	0	HR	4							
	25-50	mzc1	10YR54 00					0	0	HR	5		M					IMPEN 50

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		IMP
46	0-28	z1	10YR53 00						2	0	HR	4					
	28-40	mzc1	10YR54 00						0	0		0				M	
	40-120	mzc1	10YR56 00						0	0		0				M	
48	0-20	z1	10YR43 00						1	0	HR	2					
	20-70	mzc1	10YR43 00						0	0		0				M	
	70-120	mzc1	10YR44 46						0	0		0				M	
49	0-28	z1	10YR43 00						1	0	HR	2					
	28-50	mzc1	10YR56 00						0	0		0				M	
	50-120	mzc1	10YR58 00						0	0		0				M	
50	0-30	z1	10YR43 00						1	0	HR	2					
	30-50	mzc1	10YR54 00						0	0	HR	1				M	
	50-120	mzc1	10YR56 00						0	0		0				M	
51	0-30	z1	10YR43 00						0	0	HR	1					
	30-50	mzc1	10YR54 00						0	0		0				M	
	50-120	mzc1	10YR56 00						0	0		0				M	
52	0-30	mzc1	10YR42 43						0	0	HR	5					
	30-40	mzc1	10YR53 42						0	0	HR	2				M	
	40-55	mzc1	10YR54 00	00MN00	00	F			0	0		0				M	
	55-120	c	75YR54 00	75YR56	00	C	00MN00	00	S	0	0		0			P	Y
53	0-25	mzc1	10YR43 00						0	0	HR	2					
	25-40	mzc1	10YR54 00						0	0	HR	5				M	
	40-60	hzc1	10YR56 00						0	0	HR	12				M	IMPEN 60
54	0-27	mzc1	10YR42 43						0	0	HR	3					
	27-70	mzc1	10YR56 00						0	0	HR	5				M	
	70-120	mzc1	10YR56 64						0	0	HR	2				M	
55	0-25	mzc1	10YR43 00						0	0	HR	2					
	25-65	mzc1	10YR54 00						0	0	HR	5				M	
	65-120	mzc1	10YR54 00						0	0	HR	10				M	Y
56	0-20	z1	10YR43 00						0	0	HR	2					
	20-80	mzc1	10YR54 00						0	0		0				M	
	80-120	mzc1	10YR56 00						0	0		0				M	
57	0-30	mzc1	10YR53 00						0	0		0					
	30-100	mzc1	10YR43 53						0	0		0				M	
	100-120	hzc1	10YR53 54						0	0		0				M	
58	0-30	mzc1	10YR53 00						0	0	HR	2					
	30-90	mzc1	10YR54 53						0	0		0				M	
	90-120	hzc1	10YR54 00						0	0		0				M	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES-----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
59	0-28	z1	10YR43 00						1	0	HR	1						
	28-40	mzc1	10YR44 00						0	0		0					M	
	40-120	mzc1	10YR56 00						0	0		0					M	
60	0-30	z1	10YR43 00						0	0	HR	1						
	30-55	mzc1	10YR43 44						0	0		0					M	
	55-120	mzc1	10YR56 00						0	0		0					M	
61	0-25	z1	10YR43 00						1	0	HR	2						
	25-45	mzc1	10YR54 00						0	0	HR	1					M	
	45-120	mzc1	10YR56 00						0	0		0					M	
62	0-25	z1	10YR43 00						1	0	HR	2						
	25-40	mzc1	10YR54 56						0	0	HR	1					M	
	40-70	mzc1	10YR54 00						0	0		0					M	
	70-120	hzc1	10YR54 00						0	0		0					M	
63	0-30	z1	10YR43 00						0	0	HR	1						
	30-50	mzc1	10YR54 00						0	0	HR	1					M	
	50-120	mzc1	10YR56 00						0	0		0					M	
64	0-26	mzc1	10YR43 00						0	0	HR	5						Y
	26-53	c	75YR54 00	75YR56 00 C			00MN00 00 S		0	0	HR	2				P		Y
	53-60	c	75YR54 00	75YR56 00 C			00MN00 00 S		0	0	CH	10				P		Y Y
	60-80	hzc1	10YR44 00					S	0	0	CH	30				M		Y Y
65	0-24	mzc1	10YR42 00						0	0	HR	5						
	24-35	mzc1	10YR53 54						0	0	CH	2					M	
	35-60	hzc1	10YR56 00						0	0		0					M	
	60-120	c	10YR56 00	10YR58 73 C			00MN00 00 S		0	0		0				P		Y
66	0-25	mzc1	10YR43 53						0	0	HR	2						
	25-70	mzc1	10YR53 00						0	0	HR	10					M	
	70-120	mzc1	10YR53 00						0	0	HR	15					M	
67	0-27	mzc1	10YR43 53						0	0	HR	3						
	27-50	mzc1	10YR54 00						0	0	HR	5					M	
	50-70	mzc1	10YR54 00						0	0	CH	3					M	Y
	70-120	mzc1	10YR56 00						0	0	HR	10					M	
68	0-26	z1	10YR43 00						0	0	HR	5						
	26-70	mzc1	10YR54 00						0	0	HR	2					M	
	70-95	mzc1	10YR56 00						0	0	HR	10					M	
	95-120	c	75YR56 00	75YR58 00 C			00MN00 00 S		0	0	HR	5				P		Y
69	0-26	z1	10YR53 00						0	0	HR	2						
	26-120	mzc1	10YR56 00						0	0		0					M	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLEYS	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
70	0-30	z1	10YR43 00						0	0	HR	5						
	30-75	mzc1	10YR53 00						0	0	HR	2		M				
	75-120	mzc1	10YR54 00						0	0		0		M				
71	0-28	z1	10YR43 00						1	0	HR	2						
	28-60	mzc1	10YR54 00						0	0		0		M				
	60-120	mzc1	10YR56 00						0	0		0		M				
72	0-28	z1	10YR43 00						1	0	HR	1					Y	
	28-55	mzc1	10YR44 00						0	0	HR	1		M			Y	
	55-75	mzc1	10YR44 00						0	0	CH	3		M			Y	
	75-120	mzc1	10YR46 00						0	0	CH	1		M			Y	
73	0-30	z1	10YR43 00						1	0	HR	2						
	30-60	mzc1	10YR56 00						0	0	HR	2		M				
	60-120	mzc1	10YR56 00						0	0		0		M				
74	0-25	z1	10YR43 00						1	0	HR	1						
	25-70	mzc1	10YR56 00						0	0		0		M				
	70-120	mzc1	10YR56 00	00MN00	00	F			0	0		0		M				
75	0-28	z1	10YR43 00						0	0	HR	1						
	28-40	mzc1	10YR54 00						0	0	HR	1		M				
	40-70	mzc1	10YR56 00						0	0		0		M				
	70-120	hzc1	10YR56 00	00MN00	00	F			0	0	HR	0		M				
76	0-30	mzc1	10YR43 00						1	0	HR	2						
	30-50	mzc1	10YR43 56						0	0	HR	2		M				
	50-80	mzc1	10YR56 00						0	0		0		M				
	80-120	hzc1	10YR56 00						0	0		0		M				
77	0-30	mzc1	10YR43 00						0	0	HR	1						
	30-60	mzc1	10YR54 00						0	0		0		M				
	60-120	mzc1	10YR54 56						0	0		0		M				
78	0-27	mzc1	10YR43 00						0	0	HR	3						
	27-60	mzc1	10YR54 00						0	0		0		M				
	60-120	mzc1	75YR54 00	10YR68	73	C		S	0	0		0		M				
79	0-27	mzc1	10YR43 00						0	0	HR	5						
	27-90	mzc1	10YR54 00						0	0	HR	2		M				
	90-120	mzc1	10YR54 64						0	0	HR	2		M				
80	0-30	mzc1	10YR43 00						0	0	HR	5						
	30-120	mzc1	10YR53 54						0	0	HR	2		M				
81	0-26	mzc1	10YR43 00						2	0	HR	6						
	26-52	c	10YR56 00	10YR68	00	C	00MN00	00	S	0	0	HR	2		P		Y	
	52-70	c	10YR56 00						0	0	CH	15		P		Y	Y	

IMPEN 70 FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLEYS	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
82	0-30	mzc1	10YR43 00						0	0	HR	2						
	30-70	mzc1	10YR54 00						0	0		0					M	
	70-120	hzc1	10YR54 00						0	0		0					M	
83	0-26	mzc1	10YR43 00						0	0	HR	2						
	26-70	mzc1	10YR54 00	10YR68 00 C				S	0	0		0					M	
	70-120	hzc1	10YR54 64						0	0		0					M	
84	0-30	mzc1	10YR53 00						0	0	HR	5						
	30-100	mzc1	10YR53 00						0	0		0					M	
	100-120	hzc1	10YR54 00						0	0		0					M	
85	0-25	z1	10YR43 00						1	0	HR	2						
	25-40	z1	10YR54 00						0	0		0					M	
	40-120	mzc1	10YR56 00						0	0		0					M	
86	0-25	z1	10YR43 56						0	0	HR	2						
	25-70	mzc1	10YR54 56						0	0	HR	2					M	
	70-120	mzc1	10YR56 00						0	0		0					M	
87	0-30	z1	10YR43 00						0	0	HR	2						
	30-60	mzc1	10YR56 00						0	0	HR	2					M	
	60-120	mzc1	10YR56 00						0	0		0					M	
88	0-30	z1	10YR43 00						1	0	HR	1						
	30-40	mzc1	10YR56 00						0	0	HR	1					M	
	40-120	mzc1	10YR56 00						0	0		0					M	
89	0-30	z1	10YR43 00						1	0	HR	2						
	30-50	mzc1	10YR54 00						0	0	HR	2					M	
	50-70	mzc1	10YR54 00						0	0		0					M	
	70-120	mzc1	10YR54 00						0	0	HR	4					M	
90	0-28	mzc1	10YR43 00						0	0	HR	5						
	28-50	mzc1	10YR53 54						0	0	HR	2					M	
	50-60	mzc1	10YR54 00						0	0	HR	10					M	
	60-90	hzc1	10YR56 00	00MN00 00 F					0	0	HR	3					M	
	90-120	c	75YR54 00	00MN00 00 F					0	0	HR	3					M	
91	0-29	mzc1	10YR43 00						0	0	HR	5						
	29-40	hzc1	10YR56 00	00MN00 00 F					0	0	HR	2					M	
	40-50	hzc1	10YR44 00						0	0	CH	50					M	Y
	50-80	ch	05Y 81 00						0	0	HR	2					M	Y
92	0-26	mzc1	10YR43 00						0	0	HR	4						
	26-55	mzc1	10YR53 54						0	0	HR	2					M	
	55-85	c	75YR54 00	75YR58 00 C				S	0	0		0					P	Y
	85-120	hzc1	10YR64 00						0	0	CH	20					M	Y Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----				STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		STR	POR	IMP	SPL	CALC
93	0-25	mzc1	10YR42 43						0	0	HR	2						
	25-120	mzc1	10YR56 64						0	0		0			M			
94	0-25	z1	10YR43 53						0	0	HR	2						
	25-120	mzc1	10YR54 64						0	0		0			M			
95	0-25	z1	10YR43 00						1	0	HR	2						
	25-75	mzc1	10YR54 00						0	0		0			M			
	75-120	mzc1	10YR56 00						0	0		0			M			
96	0-30	z1	10YR43 56						0	0	HR	2						
	30-60	mzc1	10YR54 00						0	0		0			M			
	60-120	mzc1	10YR56 00						0	0		0			M			
97	0-25	z1	10YR43 00						0	0	HR	2						
	25-60	mzc1	10YR54 56						0	0		0			M			
	60-120	mzc1	10YR56 00						0	0		0			M			
98	0-28	z1	10YR43 00						1	0	HR	2						
	28-50	mzc1	10YR44 54	10YR56 00					0	0	HR	2			M			
	50-120	mzc1	10YR56 00						0	0		0			M			
99	0-30	z1	10YR43 00						1	0	HR	2						
	30-60	mzc1	10YR43 62	10YR56 00 C					0	0	HR	2			M			
	60-120	mzc1	10YR56 00						0	0		0			M			
100	0-20	z1	10YR43 00						0	0	HR	2						
	20-70	mzc1	10YR53 54						0	0		0			M			
	70-120	mzc1	10YR54 00						0	0	CH	8			M			Y
101	0-25	z1	10YR42 43						0	0	HR	2						
	25-75	mzc1	10YR56 00						0	0		0			M			
	75-120	mzc1	10YR54 00	10YR68 00 C				S	0	0		0			M			
102	0-23	z1	10YR42 00						0	0	HR	2						
	23-120	mzc1	10YR54 64	00MNO0 00 F					0	0		0			M			
103	0-25	z1	10YR43 00						1	0	HR	2						
	25-70	mzc1	10YR54 00						0	0		0			M			
	70-120	mzc1	10YR56 00						0	0		0			M			
104	0-22	z1	10YR43 00						1	0	HR	2						
	22-50	mzc1	10YR54 56						0	0		0			M			
	50-120	mzc1	10YR56 00						0	0		0			M			
105	0-25	mzc1	10YR43 00						1	0	HR	3						
	25-50	mzc1	10YR54 00	00MNO0 00 F					0	0		0			M			
	50-120	mzc1	10YR54 00						0	0		0			M			

-----MOTTLES----- PED -----STONES----- STRUCT/ SUBS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED COL.	STONES			STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	
106	0-30	z1	10YR43 00					2	0	HR	5				
	30-50	mzc1	10YR54 00					0	0		0		M		
	50-120	mzc1	10YR56 54					0	0		0		M		
107	0-30	mzc1	10YR43 00					2	0	HR	5				Y
	30-48	c	75YR58 00					0	0	HR	5		M		Y
	48-60	c	75YR58 00					0	0	CH	60		M		Y
	60-70	ch	10YR81 00					0	0	HR	2		P		Y IMPEN CHALK
108	0-30	mzc1	10YR43 00					2	0	HR	5				
	30-45	mzc1	10YR44 00					0	0	HR	5		M		
	45-68	c	75YR56 00	00MN00	00	C		0	0	HR	5		M		Y
	68-80	ch	10YR81 00					0	0	HR	2		P		Y IMPEN CHALK
109	0-26	mzc1	10YR52 53					2	0	HR	3				
	26-50	mzc1	10YR56 00	10YR58	00	C	00MN00	00	S	0	0	HR	5		M
110	0-30	mzc1	10YR53 00					0	0	HR	3				
	30-55	mzc1	10YR56 64					0	0	HR	10		M		
	55-80	hzc1	10YR54 00	10YR68	72	C		S	0	0	HR	5		M	
	80-120	c	10YR56 00	10YR68	72	C		S	0	0	HR	5		P	Y
111	0-25	mzc1	10YR53 00					0	0	HR	3				
	25-60	mzc1	10YR56 00					0	0	HR	10		M		IMPEN 60
112	0-25	mzc1	10YR43 53					0	0	HR	5				
	25-40	mzc1	10YR53 00	10YR56	00	C		Y	0	0	HR	10		M	
113	0-26	z1	10YR53 00	10YR56	00	F		0	0	HR	2				
	26-40	mzc1	10YR54 00					0	0	HR	5		M		
	40-120	mzc1	10YR56 00					0	0		0		M		
114	0-26	z1	10YR43 53					0	0	HR	3				
	26-75	mzc1	10YR56 00					0	0		0		M		
	75-120	c	75YR56 00	75YR58	00	C		S	0	0		0		P	Y
115	0-25	z1	10YR53 00					0	0	HR	3				
	25-70	mzc1	10YR54 00					0	0		0		M		
	70-100	mzc1	10YR56 00	00MN00	00	C		0	0	HR	5		M		
116	0-27	z1	10YR53 00					0	0	HR	2				
	27-80	mzc1	10YR54 00					0	0		0		M		
	80-120	mzc1	10YR56 64					0	0		0		M		
117	0-28	z1	10YR52 53					0	0	HR	2				
	28-70	mzc1	10YR54 00					0	0		0		M		
	70-120	mzc1	10YR56 64					0	0		0		M		

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT		GLE	>2	>6		LITH	TOT	STR	
118	0-26	mzc1	10YR52 53					11	0	HR	15				
	26-90	mzc1	10YR54 00					0	0	HR	10	M			IMPEN 90
119	0-27	mc1	10YR53 00					11	0	HR	15				
	27-65	mzc1	10YR54 00					0	0	HR	10	M			
	65-100	c	10YR52 00	10YR58	61	C		Y	0	0	HR	10	P	Y	IMPEN 100
120	0-24	mzc1	10YR52 53					11	0	HR	15				
	24-36	mzc1	10YR52 00	10YR56	00	C		Y	0	0	HR	5	M		
	36-90	c	10YR62 00	10YR68	72	C		Y	0	0	HR	5	P	Y	
121	0-26	mzc1	10YR52 51	10YR58	00	C		Y	11	0	HR	15			
	26-100	c	10YR62 00	10YR68	72	M		Y	0	0	HR	2	P	Y	
122	0-26	mzc1	10YR43 00					3	0	HR	6				
	26-55	mzc1	10YR54 00	00MN00	00	F		0	0	HR	5	M			
	55-90	mzc1	10YR54 00	10YR68	00	C	00MN00	00	S	0	0	HR	10	M	
123	0-24	z1	10YR43 53					0	0	HR	2				
	24-50	mzc1	10YR54 00					0	0		0	M			
	50-120	mzc1	10YR54 64	00MN00	00	F		0	0		0	M			