**A1**

# Basingstoke and Deane Borough Local Plan Plan 4: Houndsome Field Agricultural Land Classification Report September 1994

# AGRICULTURAL LAND CLASSIFICATION REPORT

## BASINGSTOKE AND DEANE BOROUGH PLAN
## PLAN 4: HOUNDSOME FIELD

### 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 Basingstoke District of Hampshire. The work forms part of MAFF's statutory input to the preparation of the Basingstoke and Deane Borough Local Plan.

1.2 Plan 4 comprises approximately 35 hectares of land, north-west of the Winchester Road and east of Southwood Farm near Basingstoke in Hampshire. An Agricultural Land Classification (ALC), survey was carried out during September 1994. The survey was undertaken at a detailed level of approximately one boring per hectare for the agricultural area. A total of 30 borings and two 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 the survey the agricultural land on the site comprised recently harvested cereals and spring oilseed rape. Areas marked as non-agricultural include a dirt track, scrubland and a disused chalk pit. Areas of woodland that exist on the site have also been mapped.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. 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.**

| Grade | Area(ha) | % of Site |
|---|---|---|
| 3a | 33.3 | 93.8 |
| Non-Agricultural | 0.6 | 1.7 |
| Woodland | 1.6 | 4.5 |
| Total area of site | 35.5 | 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 All of the agricultural land on the site has been classified as Subgrade 3a, good quality land, with soil droughtiness and workability as the main limitations. Soil profiles tend to be relatively shallow over chalk across much of the site. These profiles show a moderate restriction on the amount of profile available water which will in turn effect the level and consistency of crop yields. These profiles are appropriately classified as Subgrade 3a due to this droughtiness limitation. In the northern area of the site at slightly higher altitudes, topsoils tend to be heavier textured with deeper subsoils over the chalk. A combination of the heavy clay loam topsoil and the field capacity days for the site means that there is a restriction on the workability of this land. Consequently, the frequency and timing of cultivations and grazing by livestock will be limited, if structural damage is to be avoided.

## 2. Climate

2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (degree days Jan-June), 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. However, in a regional context, the crop adjusted soil moisture deficits are relatively low at this locality. Low soil moisture can decrease the likelihood of soil droughtiness limitations .

2.4 No local climatic factors such as exposure or frost risk are believed to affect the site.

**Table 2 : Climatic Interpolation**

| Grid Reference | SU 590 477 | SU 595 484 |
|---|---|---|
| Altitude (m) | 150 | 165 |
| Accumulated Temperature (degree days, Jan-June) | 1366 | 1348 |
| Average Annual Rainfall (mm) | 855 | 861 |
| Field Capacity (days) | 185 | 185 |
| Moisture Deficit, Wheat (mm) | 91 | 88 |
| Moisture Deficit, Potatoes (mm) | 79 | 76 |
| Overall Climatic Grade | 1 | 1 |

## 3. Relief

3.1 The site lies at an altitude of approximately 150-160 m, sloping gently from north to south.

## 4. Geology and Soils

4.1 The relevant geological sheet (BGS, 1980) shows the majority of the site to be underlain by Upper Chalk. A small area of clay with flints is shown in the north of the site.

4.2 The published soils information (SSEW, 1983) shows the majority of the soils on the site to comprise those of the Carstens association. These are described as 'well drained fine silty over clayey, clayey and fine silty soils, often very flinty' (SSEW, 1983). Towards the south of the site soils are shown to comprise those of the Charity 2 association. These are described as 'well drained flinty fine silty soils in valley bottoms. Calcareous fine silty soils chalk or chalk rubble on valley sides, sometimes shallow' (SSEW 1983).

4.3 Detailed field examination found the majority of the soils to be relatively shallow over chalk. Deeper heavier textured soils were observed towards the north and west of the site.

## 5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

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

### Subgrade 3a

5.3 Soil droughtiness and workability are the key limitations affecting the agricultural land quality on this site.

5.4 Towards the south and east of the site, where soils tend to be shallow over chalk, droughtiness is the principal limitation. The depth at which chalk is encountered is variable, between 22-60 cm. Similarly, the nature of the soil profile above the chalk also varies, comprising medium and heavy silty clay loams with varying stone contents. Therefore two soil inspection pits were dug to investigate these soil profiles, particularly the depth of rooting into the chalk. Pit 1 in the north of the site on the higher ground showed the soil profile to consist of a slightly stony (8% total flints) heavy silty clay loam topsoil extending to 21cm. This rests upon a slightly stony (10% total flints) clay upper subsoil, which contains 50% total chalk fragments between the depths of 32-40cm. Solid chalk commences at 40cm. The chalk proved to be relatively soft and stoneless with plant rooting observed to a depth of 75cm. Pit 2 towards the south of the site at a slightly lower altitude showed topsoils and upper subsoils to be of a lighter texture. A

very slightly stony (5% total flints) medium silty clay loam topsoil was found to overlie a slightly stony (10% total flints) similarly textured upper subsoil commencing at 24cm. This in turn rests upon solid chalk encountered at 40cm. The stone content of the solid chalk varies, with a very stony band (chalk with 50% total flints) occurring between 68-75cm. Rooting was observed to a depth of 85cm.

5.5 A combination of soil textures, structures, stone contents, restricted rooting depths into the chalk and the local climatic regime means that soil profiles at both pits show a restriction on the amount of profile available water for plant growth, which in turn can effect crop yields. The severity of this droughtiness limitation varies. Pit 1 can be graded no higher than Subgrade 3a, whereas Pit 2 qualifies for Grade 2 in terms of droughtiness. Given the variable nature of the soils on the site, no Grade 2 has been mapped separately; Subgrade 3a being the appropriate classification across the entire site.

5.6 Profiles at both of the pits proved to be well drained and are assigned to Wetness Class I. The heavy silty clay loam topsoil observed at Pit 2 means that a classification of Subgrade 3a is also appropriate due to a workability limitation.

5.7 Soils in the west of the site differ from the chalk profiles described by Pits 1 and 2; they are developed over a clay with flints geology and are often impenetrable to the auger in the upper subsoil. The presence of heavy clay loam topsoils limits the workability of this land, placing it into Subgrade 3a. The soil will be susceptible to structural damage through trafficking by agricultural machinery or poaching by grazing livestock for part of the year. It should be noted that individual borings of Grade 2 do exist where the profiles have medium clay loam topsoils and the clay subsoils extend below approximately 50cm. Yet these are not sufficiently significant in their extent to warrant mapping as a separate unit.

## SOURCES OF REFERENCE

British Geological Survey (1980), Sheet No. 284 , Basingstoke, 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.

[1]The 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 PROFILE DESCRIPTIONS : EXPLANATORY NOTE

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

**Boring Header Information**

1. **GRID REF** : national 100 km grid square and 8 figure grid reference.

2. **USE** : Land use at the time of survey. The following abbreviations are used.

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

3. **GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.

4. **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 | **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. **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 | **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<br>**ST** : strongly developed | **MD** : moderately developed |
| ped size | **F** : fine<br>**C** : coarse | **M** : medium<br>**VC** : very coarse |
| ped shape | **S** : single grain<br>**GR** : granular<br>**SAB** : sub-angular blocky<br>**PL** : platy | **M** : massive<br>**AB** : angular blocky<br>**PR** : prismatic |

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 appropiate 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 : BASINGSTOKE LP PLAN 4 Pit Number : 1P

Grid Reference: SU59504825 Average Annual Rainfall : 860 mm
Accumulated Temperature : 1355 degree days
Field Capacity Level : 185 days
Land Use :
Slope and Aspect : degrees

| HORIZON | TEXTURE | COLOUR | STONES >2 | TOT.STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0- 21 | HZCL | 10YR43 00 | 6 | 8 | HR | | | | | |
| 21- 32 | C | 75YR44 00 | 0 | 10 | HR | F | MDCAB | FM | M | Y |
| 32- 40 | C | 75YR44 00 | 0 | 50 | CH | | | | M | Y |
| 40- 75 | CH | 05 Y82 00 | 0 | 0 | | | | | P | Y |

Wetness Grade : 3A Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A APW : 91 mm MBW : 2 mm
APP : 93 mm MBP : 16 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : BASINGSTOKE LP PLAN 4 Pit Number : 2P

Grid Reference: SU59154780
Average Annual Rainfall : 860 mm
Accumulated Temperature : 1355 degree days
Field Capacity Level : 185 days
Land Use :
Slope and Aspect : 02 degrees S

| HORIZON | TEXTURE | COLOUR | STONES >2 | TOT.STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0- 24 | MZCL | 10YR43 44 | 2 | 5 | HR | | | | | |
| 24- 40 | MZCL | 10YR54 00 | 0 | 10 | HR | | MDCSAB | FR | M | Y |
| 40- 68 | CH | 10YR81 00 | 0 | 3 | HR | | | | P | Y |
| 68- 75 | CH | 10YR81 00 | 0 | 50 | HR | | | | P | Y |
| 75- 85 | CH | 10YR81 00 | 0 | 3 | HR | | | | P | Y |

Wetness Grade : 2
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 2
APW : 99 mm MBW : 10 mm
APP : 96 mm MBP : 19 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

| SAMPLE NO. | GRID REF | USE | ASPECT | | GRDNT | GLEY | SPL | --WETNESS-- CLASS | GRADE | -WHEAT- AP | MB | -POTS- AP | MB | M.REL DRT | FLOOD | EXP | EROSN DIST | FROST LIMIT | CHEM | ALC | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SU59254845 | OSR | | | | 000 | | 1 | 2 | 83 | -6 | 87 | 10 | 3A | | | | DR | | 3A | |
| 1P | SU59504825 | STB | | | | 000 | | 1 | 3A | 91 | 2 | 93 | 16 | 3A | | | | DR | | 3A | P100RT75 |
| 2 | SU59404840 | STB | | | | 000 | | 1 | 2 | 94 | 5 | 100 | 23 | 2 | | | | DR | | 2 | I70 CH45 |
| 2P | SU59154780 | STB | S | | 02 | 000 | | 1 | 2 | 99 | 10 | 96 | 19 | 2 | | | | DR | | 3A | PT95 RT85 |
| 3 | SU59504840 | STB | | | | 000 | | 1 | 2 | 71 | -18 | 71 | -6 | 3A | | | | DR | | 3A | I50 CH30 |
| 4 | SU59604840 | STB | | | | 000 | | 1 | 3A | 80 | -9 | 83 | 6 | 3A | | | | DR | | 3A | I60 CH29 |
| 5 | SU59704840 | STB | | | | 000 | | 1 | 3A | 56 | -33 | 56 | -21 | 3B | | | | DR | | 3A | I40 CH22 1P |
| 6 | SU59204830 | OSR | | | | 000 | | 1 | 2 | 102 | 13 | 101 | 24 | 2 | | | | DR | | 2 | CHALK 50 |
| 7 | SU59304830 | OSR | | | | 000 | | 1 | 2 | 66 | -23 | 66 | -11 | 3B | | | | DR | | 3A | I40 |
| 9 | SU59504830 | STB | | | | 000 | | 1 | 3A | 91 | 2 | 95 | 18 | 3A | | | | DR | | 3A | I65 CH48 |
| 10 | SU59604830 | STB | | | | 000 | | 1 | 3A | 75 | -14 | 75 | -2 | 3A | | | | DR | | 3A | I50 CH35 |
| 12 | SU59304820 | OSR | | | | 000 | | 1 | 2 | 95 | 6 | 109 | 32 | 2 | | | | DR | | 2 | I70 |
| 14 | SU59504820 | STB | | | | 000 | | 1 | 2 | 75 | -14 | 77 | 0 | 3A | | | | DR | | 3A | I55 CH32 |
| 16 | SU59204810 | OSR | | | | 000 | | 1 | 2 | 65 | -24 | 65 | -12 | 3B | | | | DR | | 3A | I40 |
| 17 | SU59314808 | STB | S | | 02 | 000 | | 1 | 2 | 76 | -13 | 76 | -1 | 3A | | | | DR | | 3A | I50 CH35 |
| 18 | SU59404810 | STB | S | | 02 | 000 | | 1 | 2 | 71 | -18 | 71 | -6 | 3A | | | | DR | | 3A | I45 CH33 |
| 19 | SU59504810 | STB | S | | 02 | 000 | | 1 | 2 | 62 | -27 | 62 | -15 | 3B | | | | DR | | 3A | I45 CH25 1P |
| 22 | SU59204800 | OSR | | | | 000 | | 1 | 3A | 57 | -32 | 57 | -20 | 3B | | | | WK | | 3A | I40 |
| 23 | SU59304800 | STB | S | | 02 | 000 | | 1 | 2 | 106 | 17 | 91 | 14 | 2 | | | | DR | | 2 | IMPCH100 |
| 24 | SU59404800 | STB | SE | | 02 | 000 | | 1 | 2 | 84 | -5 | 87 | 10 | 3A | | | | DR | | 3A | I60 CH40 |
| 25 | SU59004790 | OSR | | | | 000 | | 1 | 2 | 70 | -19 | 70 | -7 | 3A | | | | WK | | 3A | I45 |
| 26 | SU59104790 | STB | E | | 01 | 000 | | 1 | 2 | 74 | -15 | 74 | -3 | 3A | | | | DR | | 3A | I50 CH32 |
| 27 | SU59204790 | STB | SE | | 01 | 000 | | 1 | 2 | 79 | -10 | 79 | 2 | 3A | | | | DR | | 3A | I50 CH45 |
| 28 | SU59304790 | STB | SE | | 01 | 000 | | 1 | 2 | 106 | 17 | 110 | 33 | 2 | | | | DR | | 2 | I80 |
| 29 | SU59004775 | OSR | | | | 000 | | 1 | 2 | 90 | 1 | 96 | 19 | 3A | | | | DR | | 3A | I70 CH45 |
| 30 | SU59004785 | OSR | | | | 000 | | 1 | 2 | 102 | 13 | 103 | 26 | 2 | | | | DR | | 2 | I80 |
| 31 | SU58904775 | OSR | | | | 000 | | 1 | 2 | 91 | 2 | 97 | 20 | 3A | | | | DR | | 3A | I68 CH48 |
| 33 | SU58904770 | OSR | | | | 000 | | 1 | 2 | 100 | 11 | 101 | 24 | 2 | | | | DR | | 2 | I80 CH60 |
| 34 | SU59104770 | OSR | | | | 000 | | 1 | 2 | 101 | 12 | 101 | 24 | 2 | | | | WK | | 2 | I80 CH55 |
| 36 | SU59004760 | OSR | | | | 000 | | 1 | 2 | 85 | -4 | 90 | 13 | 3A | | | | DR | | 3A | I65 CH38 |

| SAMPLE | DEPTH | TEXTURE | COLOUR | ----MOTTLES----- COL | ABUN | CONT | PED COL. | GLEY | ----STONES---- >2 | >6 | LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0-30 | mcl | 10YR43 00 | | | | | | 2 | 0 | CH | 7 | | | | | | | |
| | 30-65 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |
| 1P | 0-21 | hzcl | 10YR43 00 | | | | | | 6 | 0 | HR | 8 | | | | | | | |
| | 21-32 | c | 75YR44 00 | 00MN00 00 F | | | 75YR42 00 | | 0 | 0 | HR | 10 | MDCAB FM | M | Y | | Y | | |
| | 32-40 | c | 75YR44 00 | | | | | | 0 | 0 | CH | 50 | | M | | | Y | | |
| | 40-75 | ch | 05 Y82 00 | | | | | | 0 | 0 | | 0 | | P | | | Y | | ROOTS TO 75CM |
| 2 | 0-25 | mzcl | 10YR42 43 | | | | | | 0 | 0 | HR | 4 | | | | | | | |
| | 25-45 | c | 10YR46 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 45-70 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 2P | 0-24 | mzcl | 10YR43 44 | | | | | | 2 | 0 | HR | 5 | | | | | | | |
| | 24-40 | mzcl | 10YR54 00 | | | | | | 0 | 0 | HR | 10 | MDCSAB FR | M | | | Y | | |
| | 40-68 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | Y | | |
| | 68-75 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 50 | | P | | | Y | | |
| | 75-85 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | Y | | ROOTS TO 85CM |
| 3 | 0-25 | mzcl | 10YR43 00 | | | | | | 3 | 0 | HR | 5 | | | | | | | |
| | 25-30 | mzcl | 10YR44 00 | | | | | | 0 | 0 | CH | 50 | | M | | | | | |
| | 30-50 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 4 | 0-29 | hzcl | 10YR43 00 | | | | | | 2 | 0 | HR | 4 | | | | | | | |
| | 29-60 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 5 | 0-22 | hzcl | 10YR43 00 | | | | | | 5 | 0 | HR | 8 | | | | | | | |
| | 22-40 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 6 | 0-25 | mcl | 10YR43 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-50 | c | 10YR54 00 | | | | | | 0 | 0 | CH | 5 | | M | | | | | |
| | 50-80 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |
| 7 | 0-25 | mzcl | 10YR42 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-40 | c | 10YR54 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | IMP FLINT |
| 9 | 0-19 | hzcl | 10YR43 00 | | | | | | 2 | 0 | HR | 4 | | | | | | | |
| | 19-48 | c | 05YR44 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 48-65 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 10 | 0-28 | hzcl | 10YR43 00 | | | | | | 4 | 0 | HR | 8 | | | | | | | |
| | 28-35 | hzcl | 10YR56 00 | 00MN00 00 F | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 35-50 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |
| 12 | 0-25 | mcl | 10YR43 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-45 | hzcl | 10YR54 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | |
| | 45-70 | c | 75YR54 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | IMP FLINT |
| 14 | 0-22 | mzcl | 10YR43 00 | | | | | | 5 | 0 | HR | 8 | | | | | | | |
| | 22-32 | hzcl | 10YR56 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 32-55 | ch | 05Y 82 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | IMP FLINT |

| SAMPLE | DEPTH | TEXTURE | COLOUR | ----MOTTLES----- COL | ABUN | CONT | PED COL. | GLEY | ----STONES---- >2 | >6 | LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 0-25 | mzcl | 10YR42 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-40 | c | 10YR54 00 | | | | | | 0 | 0 | HR | 15 | | M | | | | | IMP FLINT |
| 17 | 0-25 | mzcl | 10YR44 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | |
| | 25-35 | hzcl | 10YR44 54 | | | | | | 0 | 0 | CH | 10 | | M | | | | | |
| | 35-50 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 18 | 0-33 | mzcl | 10YR44 00 | | | | | | 1 | 0 | HR | 5 | | | | | | | |
| | 33-45 | ch | 10YR81 74 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 19 | 0-25 | mzcl | 10YR44 00 | | | | | | 3 | 0 | HR | 10 | | | | | | | |
| | 25-45 | ch | 10YR81 74 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 22 | 0-25 | hcl | 10YR42 00 | | | | | | 7 | 0 | HR | 12 | | | | | | | |
| | 25-40 | c | 75YR44 00 | | | | | | 0 | 0 | HR | 30 | | M | | | | | IMP FLINT |
| 23 | 0-30 | mzcl | 10YR44 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 30-80 | ch | 10YR81 74 | | | | | | 0 | 0 | HR | 5 | | P | | | | | |
| | 80-100 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | | |
| 24 | 0-30 | mzcl | 10YR44 00 | | | | | | 2 | 0 | HR | 10 | | | | | | | |
| | 30-40 | hzcl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 40-60 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 25 | 0-25 | hcl | 10YR42 00 | | | | | | 7 | 0 | HR | 10 | | | | | | | |
| | 25-45 | c | 75YR44 00 | 00MN00 | 00 | C | | | 0 | 0 | HR | 10 | | M | | | | | IMP FLINT |
| 26 | 0-32 | mzcl | 10YR44 00 | | | | | | 2 | 0 | HR | 8 | | | | | | | |
| | 32-50 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 27 | 0-25 | mzcl | 10YR44 00 | | | | | | 2 | 0 | HR | 6 | | | | | | | |
| | 25-40 | hzcl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 40-50 | ch | 10YR81 00 | | | | | | 0 | 0 | HR | 3 | | P | | | | | IMP FLINT |
| 28 | 0-25 | mzcl | 10YR44 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-55 | hzcl | 10YR44 54 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 55-80 | mzcl | 10YR73 81 | | | | | | 0 | 0 | CH | 40 | | M | | | | | IMP FLINT |
| 29 | 0-25 | mzcl | 10YR43 00 | | | | | | 7 | 0 | HR | 12 | | | | | | | |
| | 25-45 | hcl | 10YR54 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | |
| | 45-70 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |
| 30 | 0-25 | mcl | 10YR43 00 | | | | | | 2 | 0 | HR | 7 | | | | | | | |
| | 25-50 | hcl | 10YR54 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 50-55 | c | 75YR44 00 | | | | | | 0 | 0 | HR | 2 | | M | | | | | |
| | 55-80 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | M | | | | | IMP FLINT |
| 31 | 0-25 | mzcl | 10YR43 00 | | | | | | 7 | 0 | HR | 12 | | | | | | | |
| | 25-40 | c | 75YR44 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 40-48 | c | 10YR64 00 | | | | | | 0 | 0 | CH | 20 | | M | | | | | |
| | 48-68 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |

| SAMPLE | DEPTH | TEXTURE | COLOUR | ----MOTTLES----- COL | ABUN | CONT | PED COL. | GLEY | ----STONES---- >2 | >6 | LITH | TOT | STRUCT/ CONSIST | SUBS STR | POR | IMP | SPL | CALC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 0-25 | mzcl | 10YR43 00 | | | | | | 7 | 0 | HR | 10 | | | | | | | |
| | 25-35 | hcl | 10YR54 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 35-60 | hcl | 10YR54 00 | | | | | | 0 | 0 | CH | 50 | | M | | | | | |
| | 60-80 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |
| 34 | 0-25 | mzcl | 10YR43 00 | | | | | | 7 | 0 | HR | 15 | | | | | | | |
| | 25-35 | hcl | 10YR54 00 | | | | | | 0 | 0 | HR | 10 | | M | | | | | |
| | 35-55 | hcl | 10YR54 00 | | | | | | 0 | 0 | CH | 10 | | M | | | | | |
| | 55-80 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |
| 36 | 0-25 | mzcl | 10YR43 00 | | | | | | 7 | 0 | HR | 10 | | | | | | | |
| | 25-38 | c | 75YR44 00 | | | | | | 0 | 0 | HR | 5 | | M | | | | | |
| | 38-65 | ch | 00ZZ00 00 | | | | | | 0 | 0 | | 0 | | P | | | | | IMP FLINT |