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Winchester District Local Plan
Site 154 Ridge Farm Whiteley
Agricultural Land Classification
ALC Map and Report
August 1994

# AGRICULTURAL LAND CLASSIFICATION REPORT

## WINCHESTER DISTRICT LOCAL PLAN
## SITE 154 RIDGE FARM WHITELEY

### 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 Winchester District of Hampshire The work forms part of MAFF s statutory input to the preparation of the Winchester District Local Plan

1 2 Site 154 comprises approximately 39 hectares of land at Ridge Farm south of Curbridge in Hampshire An Agricultural Land Classification (ALC) survey was carried out during July 1994 The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed A total of 40 borings and three 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 At the time of the survey the land on the site was not in agricultural management and comprised rough grazing The Urban mapped comprises a gravel track and derelict house The Agricultural Buildings mapped are also derelict Land in Non agricultural use consists of footpaths and overgrown areas The Woodland mapped mostly comprises mature deciduous trees

1 4 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 | % of Agricultural Land |
|---|---|---|---|
| 2 | 2 4 | 6 1 | 7 3 |
| 3b | 30 7 | 78 3 | 92 7 |
| Non agricultural | 0 8 | 2 0 | 100 0 (33 1 ha) |
| Urban | 0 4 | 1 0 | |
| Woodland | 4 8 | 12 3 | |
| Farm buildings | <0 1 | 0 3 | |
| Total area of site | 39 2 | 100 0 | |

1 5 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 6 The majority of agricultural land surveyed has been classified as Subgrade 3b moderate quality The key limitation is soil wetness Medium clay loams and occasionally medium silty clay loams are underlain by heavy clay loam and clay upper subsoils and clay lower subsoils These subsoils are slowly permeable and act to significantly impair drainage resulting in soil wetness problems To the west of Ridge Farm the land is also poorly drained but has heavier topsoils typically heavy clay loams and clays Consequently this land is also restricted by soil workability limitations A small area in the west of the site occupying slightly higher land has been classified as Grade 2 very good quality because of a slight soil droughtiness restriction Profiles typically comprise medium sandy loam topsoils and upper subsoils over well structured loamy medium sands and medium sands at depth

## 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

2 4 No local climatic factors such as exposure or frost risk are believed to affect the site

**Table 2 Climatic Interpolations**

| Grid Reference | SU525107 | SU530110 |
|---|---|---|
| Altitude (m) | 20 | 5 |
| Accumulated Temperature (degree days Jan June) | 1532 | 1549 |
| Average Annual Rainfall (mm) | 807 | 795 |
| Field Capacity (days) | 166 | 164 |
| Moisture Deficit Wheat (mm) | 112 | 114 |
| Moisture Deficit Potatoes (mm) | 107 | 109 |
| Overall Climatic Grade | 1 | 1 |

## 3 Relief

3 1 The site occupies a shallow valley falling from approximately 20m AOD along the eastern and western boundaries to lie at approximately 5m AOD adjacent to Ridge Lane Neither gradient or relief impose any limitation to agricultural land quality

## 4 Geology and Soil

4 1 The relevant geological sheet (BGS 1971) shows most of the site to be underlain by London Clay A small area of land to the south of Ridge Farm is shown to be underlain by Reading Beds

4 2 The published Soil Survey map (SSEW 1983) maps the Wickham 4 association at this site These soils are described as slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils often with brown subsoils (SSEW 1983)

4 3 Detailed field examination found two soil types heavy textured poorly drained soils across most of the site and moderately well drained sandy textured soils in the extreme south 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

### Grade 2

5 3 Very good quality land is restricted by a slight soil droughtiness limitation caused by sandy textured soils Profiles typically comprise non calcareous medium sandy loam topsoils over moderately structured medium sandy loam upper subsoils These pass into well structured loamy medium sand lower subsoils at approximately 70cm which either extend to depth or pass into well structured medium sands at approximately 90 100cm depth Profiles are stoneless to very slightly stony (0 5% total flints by volume) and are either well drained (Wetness Class I) or moderately well drained (Wetness Class II) where gleying occurs within 40cm depth These profiles are typified by Pit 2 The combination of sandy textures stone contents structural conditions and the prevailing climate at this site means that this land can be classified as no better than Grade 2 The slightly restricted amount of water available in the profile for extraction by roots reduces the range of crops that can tolerate such conditions

### Subgrade 3b

5 4 Moderate quality land is restricted by significant soil wetness limitations and across part of the site also by significant soil workability limitations Where soil wetness is the sole restriction medium clay loam and occasionally medium silty clay loam topsoils are directly underlain by slowly permeable subsoils Upper subsoils comprise heavy clay loams which are moderately structured and also clays which are poorly structured Lower subsoils comprise clays which again are poorly structured These subsoils act to severely impede drainage as evidenced by gleying below and within the topsoils Consequently these profiles are assigned to

Wetness Class IV and are typified by Pits 1 and 3 This soil wetness can adversely affect crop growth and yields To the west of Ridge Farm the land is still poorly drained (Wetness Class IV) because of similar subsoil conditions but has heavier topsoils typically heavy clay loams and clays Consequently this area of land is subject to soil workability limitations in addition to soil wetness restrictions such as reduced flexibility of cultivations cropping and stocking

ADAS Ref 1513/121/94
MAFF Ref EL15/00594

Resource Planning Team
Guildford Statutory Group
ADAS Reading

## SOURCES OF REFERENCE

British Geological Survey (1971) Sheet No 316 Fareham 1 63 360 (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 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 religous buildings cemetries 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 | **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 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 WINCHESTER DLP SITE 154 Pit Number 1P

Grid Reference SU52801110 Average Annual Rainfall 807 mm
Accumulated Temperature 1532 degree days
Field Capacity Level 166 days
Land Use Rough Grazing
Slope and Aspect degrees

| HORIZON | | TEXTURE | COLOUR | STONES | 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 25 | MCL | 10YR43 00 | 0 | | 2 | HR | F | | | | |
| 25 | 48 | HCL | 10YR42 00 | 0 | | 2 | HR | C | MDCAB | FR | M | |
| 48 | 65 | C | 10YR53 00 | 0 | | 0 | | M | MDCAB | FM | P | |

Wetness Grade 3B Wetness Class IV
Gley 025 cm
SPL 025 cm

Drought Grade APW mm MBW 0 mm
APP mm MBP 0 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name WINCHESTER DLP SITE 154 P t N mber 2P

Grid Reference SU52711080 A erage Ann al Rainfall 807 mm
Acc l ted Tempe t e 1532 deg ee days
Field Capacity Le el 166 days
Land Use R gh G zi g
Slope a d Aspect 01 deg ees E

| HORIZON | TEXTURE | COLOUR | STONES 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 32 | MSL | 10YR42 00 | 0 | 2 | HR | | | | | |
| 32 60 | MSL | 10YR56 00 | 0 | 1 | HR | | MDCAB | FM | M | |
| 60 70 | MSL | 10YR56 00 | 0 | 1 | HR | | MDCAB | FR | M | |
| 70 90 | LMS | 10YR66 58 | 0 | 0 | | | WKCAB | FR | G | |
| 90 120 | MS | 25Y 56 00 | 0 | 0 | | | MDCSAB | VF | G | |

Wetness Grade 1 W t s Cl s I
Gleyi g cm
SPL No SPL

D ought G ade 2 APW 128mm MBW 16 mm
APP 110mm MBP 3 mm

FINAL ALC GRADE 2
MAIN LIMITATION Dro ght ness

SOIL PIT DESCRIPTION

Site Name WINCHESTER DLP SITE 154 P t N be 3P

Grid Refe e ce SU53301100 A erage Ann al Ra nfall 807 mm
Acc mulated Tempe t e 1532 d g d y
F eld Capac ty Le l 166 d ys
Land Use Ro gh G a ng
Slope d A pect degr s

| HORIZON | TEXTURE | COLOUR | STONES | 2 | TOT STONE | LITH | MOTTLES | STRUCTURE | CONSIST | SUBSTRUCTURE | CALC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 27 | MZCL | 10YR52 00 | 0 | | 2 | HR | C | | | | |
| 27 55 | C | 10YR53 00 | 0 | | 5 | HR | M | MDVCAB | FM | P | |

Wetness Grade 3B W t ess Cla s IV
Gley ng 0 cm
SPL 027 cm

Dro ght Grade APW mm MBW 0 mm
APP mm MBP 0 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wet ess

| SAMPLE NO | GRID REF | USE | ASPECT | GRDNT | GLEY | SPL | WETNESS CLASS | WHEAT GRADE | WHEAT AP | WHEAT MB | POTS AP | POTS MB | M REL DRT | FLOOD | EROSN EXP | FROST DIST | CHEM LIMIT | ALC | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SU52701120 | RGR | NW | 01 | | 026 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 26 |
| 1P | SU52801110 | RGR | | | 025 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | PIT TO 65 |
| 2P | SU52711080 | RGR | E | 01 | | | 1 | 1 | 128 | 16 | 110 | 3 | 2 | | | | DR | 2 | PIT TO 120 |
| 3P | SU53301100 | RGR | | | 0 | 027 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 27 |
| 4 | SU53001120 | RGR | N | 01 | 0 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 5 | SU53101120 | RGR | W | 02 | 025 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 6 | SU53201120 | RGR | SE | 01 | 030 | 050 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | SPL 50 |
| 7 | SU52701110 | RGR | | | 0 | 028 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 28 |
| 8 | SU52801110 | RGR | | | 0 | 045 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | RE 1P |
| 9 | SU52921110 | RGR | W | 02 | 030 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 10 | SU53011110 | RGR | | | 030 | 065 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | SPL 65 |
| 11 | SU53101110 | RGR | | | 030 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 12 | SU53201110 | RGR | | | 035 | 035 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 35 |
| 13 | SU53301110 | RGR | | | 0 | | 2 | 2 | 142 | 30 | 116 | 9 | 2 | | | | DR | 2 | SANDY |
| 14 | SU53381112 | RGR | | | 030 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 15 | SU52801100 | RGR | | | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 16 | SU52881100 | RGR | N | 02 | 0 | 020 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 20 |
| 17 | SU53021099 | RGR | W | 02 | 0 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 18 | SU53101100 | RGR | | | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 19 | SU53201100 | RGR | | | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 20 | SU53301100 | RGR | | | 0 | 027 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 27 |
| 21 | SU53401100 | RGR | | | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 22 | SU53501100 | RGR | | | 0 | 027 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 27 |
| 23 | SU52801090 | RGR | | | 0 | 028 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 28 |
| 24 | SU52901090 | RGR | N | 02 | 0 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 25 | SU53001090 | RGR | E | 02 | 0 | 027 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 27 |
| 27 | SU53201090 | RGR | | | 0 | 028 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 28 |
| 28 | SU53301090 | RGR | | | 0 | 028 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 28 |
| 29 | SU53401090 | RGR | | | 0 | 028 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 28 |
| 30 | SU53501090 | RGR | | | 0 | 022 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 22 |
| 31 | SU52701080 | RGR | | | 035 | | 2 | 1 | 130 | 18 | 111 | 4 | 2 | | | | DR | 2 | SANDY |
| 32 | SU53121080 | RGR | | | 0 | 035 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 35 |
| 33 | SU53201080 | RGR | S | 01 | 0 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 34 | SU53401080 | RGR | S | 02 | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 35 | SU53501080 | RGR | SW | 04 | 0 | 027 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SL GLEY 0 |
| 36 | SU52301070 | RGR | N | 01 | 0 | 025 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 25 |
| 37 | SU52501070 | RGR | SW | 01 | 045 | | 1 | 1 | 128 | 16 | 97 | 10 | 2 | | | | DR | 2 | SANDY |
| 38 | SU52601070 | RGR | | | 0 | 045 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | WC IV/III |
| 39 | SU52421057 | RGR | S | 01 | 030 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 40 | SU52351065 | RGR | N | 01 | 030 | 030 | 4 | 3B | | 0 | | 0 | | | | | WE | 3B | SPL 30 |
| 41 | SU52411062 | RGR | | | 030 | | 2 | 1 | 137 | 25 | 109 | 2 | 2 | | | | DR | 2 | SANDY |
| 42 | SU52761078 | RGR | | | 045 | 045 | 3 | 3A | | 0 | | 0 | | | | | WE | 3A | WC IV/III |

| SAMPLE NO | GRID REF | ASPECT USE | GRDNT | GLEY | SPL | WETNESS CLASS | WHEAT GRADE | WHEAT AP | WHEAT MB | POTS AP | POTS MB | M REL DRT | EROSN FLOOD | EXP | FROST DIST | CHEM LIMIT | ALC | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | SU52811082 | RGR | 0 | 030 | 4 | 3B | | 0 | | 0 | | | | | | WE | 3B | SPL 30 |

| | | | | MOTTLES | | | PED | | | STONES | | | | STRUCT/ | SUBS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | DEPTH | TEXTURE | COLOUR | COL | ABUN | CONT | COL | GLEY | 2 | 6 | LITH | TOT | CONSIST | STR | POR | IMP | SPL | CALC |
| 1 | 0 26 | mcl | 10YR44 46 | 10YR53 00 | F | | | | 0 | 0 | HR | 3 | | | | | | |
| | 26 60 | hcl | 10YR54 00 | 75YR68 61 | M | | | S | 0 | 0 | HR | 1 | | M | | | Y | |
| 1P | 0 25 | mcl | 10YR43 00 | 75YR46 00 | F | | | | 0 | 0 | HR | 2 | | | | | | |
| | 25 48 | hcl | 10YR42 00 | 75YR46 00 | C | | 00MN00 00 | Y | 0 | 0 | HR | 2 | MDCAB | FR | M | Y | | Y |
| | 48 65 | c | 10YR53 00 | 75YR68 61 | M | | | Y | 0 | 0 | | 0 | MDCAB | FM | P | Y | | Y |
| 2P | 0 32 | msl | 10YR42 00 | | | | | | 0 | 0 | HR | 2 | | | | | | |
| | 32 60 | msl | 10YR56 00 | | | | | | 0 | 0 | HR | 1 | MDCAB | FM | M | | | |
| | 60 70 | msl | 10YR56 00 | | | | | | 0 | 0 | HR | 1 | MDCAB | FR | M | | | |
| | 70 90 | lms | 10YR66 58 | | | | | | 0 | 0 | | 0 | WKCAB | FR | G | | | |
| | 90 120 | ms | 25Y 56 00 | | | | | | 0 | 0 | | 0 | MDCSAB | VF | G | | | |
| 3P | 0 27 | m cl | 10YR52 00 | 75YR46 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 27 55 | c | 10YR53 00 | 75YR58 61 | M | | | Y | 0 | 0 | HR | 5 | MDVCAB | FM | P | Y | | Y |
| 4 | 0 25 | mcl | 10YR42 52 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 25 55 | hcl | 25Y 53 51 | 10YR68 00 | C | | | Y | 0 | 0 | | 0 | | M | | | Y | |
| | 55 90 | c | 25Y 61 62 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 5 | 0 25 | mcl | 10YR42 52 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 25 55 | hcl | 10YR53 63 | 10YR66 00 | C | | | Y | 0 | 0 | HR | 10 | | M | | | Y | |
| | 55 80 | c | 25Y 62 72 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 6 | 0 30 | mcl | 10YR42 00 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 30 50 | mcl | 10YR53 52 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 50 80 | c | 25Y 61 63 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 7 | 0 28 | mcl | 10YR42 00 | 75YR46 00 | M | | | Y | 0 | 0 | | 0 | | | | | | |
| | 28 50 | c | 10YR52 61 | 75YR68 56 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 50 60 | c | 10YR52 61 | 75YR68 56 | M | | | Y | 0 | 0 | HR | 5 | | P | | | Y | |
| 8 | 0 30 | mcl | 10YR42 00 | 75YR46 51 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 30 45 | mcl | 10YR42 00 | 75YR46 51 | C | | 00MN00 00 | Y | 0 | 0 | HR | 2 | | M | | | | |
| | 45 54 | hcl | 10YR42 00 | 10YR51 46 | M | | 00MN00 00 | Y | 0 | 0 | HR | 2 | | M | | | Y | |
| | 54 70 | c | 10YR61 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 9 | 0 30 | mcl | 10YR43 00 | | | | | | 0 | 0 | HR | 2 | | | | | | |
| | 30 65 | c | 10YR53 52 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 65 80 | c | 25Y 52 53 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 5 | | P | | | Y | |
| 10 | 0 30 | mcl | 10YR42 00 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 30 65 | mcl | 10YR53 52 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 65 90 | c | 05Y 62 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 11 | 0 30 | mcl | 10YR42 52 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 30 45 | hcl | 10YR53 52 | 10YR46 00 | C | | | Y | 0 | 0 | | 0 | | M | | | Y | |
| | 45 65 | c | 10YR53 52 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 65 80 | c | 05Y 51 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 0 35 | mcl | 10YR42 00 | 10YR46 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 35 60 | c | 10YR63 61 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 13 | 0 30 | mcl | 25Y 52 51 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 30 45 | mcl | 25Y 63 62 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 45 70 | scl | 25Y 63 62 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 70 120 | lms | 05Y 71 00 | 10YR58 00 | M | | | Y | 0 | 0 | | 0 | | G | | | | |
| 14 | 0 30 | mcl | 10YR42 00 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 30 60 | c | 25Y 61 62 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 15 | 0 30 | mcl | 10YR52 42 | 75YR46 00 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 30 60 | c | 10YR61 52 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 2 | | P | | | Y | |
| 16 | 0 20 | hcl | 10YR53 43 | 10YR58 62 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 20 35 | c | 10YR53 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| | 35 60 | c | 10YR53 00 | 75YR58 00 | M | 00MN00 | 00 | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| 17 | 0 25 | mcl | 10YR53 52 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 25 40 | c | 25Y 53 00 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 15 | | P | | | Y | |
| 18 | 0 30 | mcl | 10YR42 00 | 10YR46 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 30 70 | c | 25Y 53 52 | 75YR58 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 19 | 0 30 | mcl | 10YR42 00 | 10YR46 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 30 40 | c | 10YR53 52 | 10YR58 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 40 70 | | 05Y 71 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 20 | 0 27 | mcl | 10YR52 42 | 75YR46 00 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 27 55 | c | 10YR61 52 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 2 | | P | | | Y | |
| 21 | 0 30 | mcl | 10YR42 00 | 75YR46 52 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 30 55 | c | 10YR52 00 | 75YR68 62 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 22 | 0 27 | mcl | 10YR42 00 | 75YR46 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 27 55 | c | 10YR53 00 | 75YR68 61 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 23 | 0 28 | c | 10YR53 00 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 28 55 | c | 10YR52 53 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 24 | 0 25 | hcl | 10YR42 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 25 60 | c | 10YR53 00 | 75YR58 61 | M | 00MN00 | 00 | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| 25 | 0 27 | hcl | 10YR53 00 | 75YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 27 35 | c | 10YR53 00 | 10YR56 00 | C | | | Y | 0 | 0 | HR | 5 | | P | | | Y | |
| | 35 60 | c | 10YR53 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| 27 | 0 28 | mcl | 10YR53 00 | 10YR58 52 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 28 38 | hcl | 10YR63 00 | 75YR46 61 | C | | | Y | 0 | 0 | HR | 5 | | M | | | Y | |
| | 38 60 | c | 10YR63 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | P | | | Y | |

| SAMPLE | DEPTH | TEXTURE | COLOUR | MOTTLES COL | MOTTLES ABUN | MOTTLES CONT | PED COL | GLEY | STONES 2 | STONES 6 | STONES LITH | STONES TOT | STRUCT/ CONSIST | SUBS STR | SUBS POR | SUBS IMP | SUBS SPL | SUBS CALC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | 0 28 | mzcl | 10YR53 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 28 36 | hzcl | 10YR63 00 | 75YR46 61 | C | | | Y | 0 | 0 | HR | 1 | | M | | | Y | |
| | 36 60 | c | 10YR63 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| 29 | 0 28 | mzcl | 10YR63 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 28 35 | h cl | 10YR58 61 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | M | | | Y | |
| | 35 60 | c | 10YR63 00 | 10YR58 61 | C | | | Y | 0 | 0 | HR | 1 | | P | | | Y | |
| 30 | 0 22 | mzcl | 10YR42 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 22 46 | h cl | 10YR42 00 | 10YR58 00 | C | | 00MN00 00 | Y | 0 | 0 | HR | 3 | | M | | | Y | |
| | 46 75 | h cl | 10YR53 00 | 75YR46 00 | C | | 00MN00 00 | Y | 0 | 0 | HR | 2 | | M | | | Y | |
| 31 | 0 35 | msl | 10YR42 00 | 10YR56 00 | F | | | | 0 | 0 | HR | 2 | | | | | | |
| | 35 60 | scl | 10YR62 00 | 10YR66 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 60 70 | scl | 10YR63 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 70 100 | lms | 25Y 72 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | G | | | | |
| | 100 120 | ms | 25Y 72 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | G | | | | |
| 32 | 0 28 | mzcl | 10YR32 00 | 75YR46 00 | M | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 28 35 | mzcl | 10YR42 00 | 75YR46 00 | M | | | Y | 0 | 0 | HR | 1 | | M | | | | |
| | 35 45 | hzcl | 10YR42 00 | 75YR46 00 | M | | | Y | 0 | 0 | HR | 1 | | M | | | Y | |
| | 45 65 | hzcl | 10YR61 00 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 5 | | M | | | Y | |
| 33 | 0 25 | mcl | 10YR42 00 | 75YR46 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 25 55 | hcl | 10YR52 00 | 75YR46 00 | M | | 00MN00 00 | Y | 0 | 0 | HR | 5 | | M | | | Y | |
| 34 | 0 30 | hzcl | 10YR42 00 | 10YR58 00 | C | | | Y | 0 | 0 | HR | 2 | | | | | | |
| | 30 60 | c | 10YR63 00 | 75YR58 61 | C | | | Y | 0 | 0 | HR | 2 | | P | | | Y | |
| 35 | 0 27 | mcl | 10YR43 00 | 75YR46 00 | C | | | S | 0 | 0 | HR | 1 | | | | | | |
| | 27 55 | c | 10YR61 53 | 75YR68 00 | M | | | Y | 0 | 0 | HR | 2 | | P | | | Y | |
| 36 | 0 25 | mcl | 25Y 52 53 | 10YR56 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 25 40 | c | 25Y 53 00 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 40 80 | c | 25Y 53 63 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 37 | 0 30 | msl | 10YR42 00 | 10YR56 00 | F | | | | 0 | 0 | | 0 | | | | | | |
| | 30 45 | msl | 10YR43 53 | | | | | | 0 | 0 | | 0 | | M | | | | |
| | 45 70 | lms | 25Y 52 00 | 10YR58 00 | M | | | Y | 0 | 0 | HR | 2 | | G | | | | |
| | 70 100 | lms | 25Y 63 73 | 10YR68 00 | C | | | Y | 0 | 0 | HR | 2 | | G | | | | |
| | 100 120 | lms | 25Y 72 82 | 10YR68 78 | M | | | Y | 0 | 0 | HR | 2 | | G | | | | |
| 38 | 0 35 | mcl | 25Y 41 51 | 10YR58 00 | C | | | Y | 0 | 0 | | 0 | | | | | | |
| | 35 45 | mcl | 25Y 51 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 45 55 | hcl | 25Y 61 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | Y | |
| | 55 80 | c | 25Y 62 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 39 | 0 30 | msl | 10YR42 00 | | | | | | 0 | 0 | | 0 | | | | | | |
| | 30 70 | c | 25Y 53 72 | 10YR58 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| | 70 90 | c | 25Y 63 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 0 30 | mcl | 25Y 42 00 | 10YR58 00 | F | | | | 0 | 0 | | 0 | | | | | | |
| | 30 70 | hcl | 25Y 52 00 | 75YR58 00 | M | | | Y | 0 | 0 | | 0 | | M | | | Y | |
| | 70 90 | c | 25Y 73 00 | 75YR68 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 41 | 0 30 | msl | 10YR42 00 | | | | | | 0 | 0 | HR | 5 | | | | | | |
| | 30 70 | msl | 10YR52 53 | 10YR58 00 | M | | | Y | 0 | 0 | | 0 | | M | | | | |
| | 70 120 | lms | 25Y 53 52 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | G | | | | |
| 42 | 0 30 | mcl | 10YR42 00 | 10YR46 00 | F | | | | 0 | 0 | | 0 | | | | | | |
| | 30 45 | mcl | 10YR44 54 | | | | | | 0 | 0 | | 0 | | M | | | | |
| | 45 55 | hcl | 25Y 62 00 | 10YR68 00 | M | | | Y | 0 | 0 | | 0 | | M | | | Y | |
| | 55 90 | c | 10YR72 00 | 10YR58 00 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |
| 43 | 0 30 | c | 10YR42 00 | 75YR46 51 | C | | | Y | 0 | 0 | HR | 1 | | | | | | |
| | 30 55 | c | 10YR53 00 | 75YR68 61 | M | | | Y | 0 | 0 | | 0 | | P | | | Y | |