

FRCA



FARMING AND RURAL CONSERVATION AGENCY
An Executive Agency of the Ministry of Agriculture, Fisheries and Food and the Welsh Office

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**Land at Whitsundoles Farm,
Salford, Bedfordshire
Proposed Sand and Gravel Extraction.**

**Statement of Physical Characteristics
Map and Report**

July 1997

**Resource Planning Team
Eastern Region
FRCA Reading**

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STATEMENT OF PHYSICAL CHARACTERISTICS
WHITSUNDOLES FARM, SALFORD, BEDFORDSHIRE

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) and assessment of site physical characteristics on 37 hectares of land around Whitsundoles Farm to the west of Salford in Bedfordshire. The survey was carried out during June and July 1997.
2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA) on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with proposals for sand and gravel extraction and subsequent landfill for restoration to agriculture under the 1981 Minerals Act. This survey supersedes any previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey, the majority of the agricultural land on this site was under barley, with smaller areas of wheat, oil seed rape and set-aside located towards the south of the site. The areas mapped as 'Other Land' comprise some farm buildings to the south east and a small area of woodland towards the south of the site.

SUMMARY

5. The land classification of the survey area is shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	15.7	43.0	42.4
3b	20.8	57.0	56.2
Other land	0.5	N/A	1.4
Total surveyed area	36.5	100	98.6
Total site area	37.0	-	100

7. The fieldwork was conducted at an average density of slightly more than 1 boring per hectare of agricultural land. A total of 41 borings and 5 soil pits were described.

8. The agricultural land at this site has been classified as Grade 2 (very good quality) and Subgrade 3b (moderate quality). The soils are derived from an underlying geology of Oxford Clay and second terrace drift deposits. Principal limitations to land quality include soil wetness and soil droughtiness.

FACTORS INFLUENCING ALC GRADE

Climate

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

10. The key climatic variables used for grading this site are given in Table 2, overleaf. These were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

11. 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.

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

Table 2: Climatic and altitude data

Factor	Units	Values	
		SP 924 400	SP 920 406
Grid reference	N/A		
Altitude	m, AOD	67	70
Accumulated Temperature	day°C (Jan-June)	1412	1409
Average Annual Rainfall	mm	606	608
Field Capacity Days	days	122	121
Moisture Deficit, Wheat	mm	112	112
Moisture Deficit, Potatoes	mm	105	105
Overall climatic grade	N/A	Grade 1	Grade 1

13. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Other local climatic factors such as exposure and frost risk are also believed not to affect the site. The site is climatically Grade 1.

Site

14. The site lies at an altitude between approximately 67 and 70m AOD. The site is at two levels. Towards the north, it is virtually flat at around 70m and towards the south, again, it is flat at approximately 67m. The slopes between these areas are slight and occur to the immediate north of the farm buildings located towards the centre of the site in an approximate north east to south west direction. The slope is not of sufficient gradient to adversely affect land quality. Other site factors such as microrelief and flooding are not significant.

Geology and soils

15. The published geological information for the site (BGS, 1864 and 1971) shows it to be underlain by Oxford Clay as a solid deposit. The more recent mapping (BGS, 1971) only covers the west of the site and indicates that a second terrace drift deposit overlies the Oxford Clay in this area. This drift may extend across the slightly higher land to the north of the site.

16. The most detailed published soils information for the site (SSEW, 1983 and 1984) shows this site to comprise soils of the Bishampton 2 and Evesham 2 associations. The Bishampton soils are described as comprising, 'Deep fine loamy and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar slowly permeable seasonally waterlogged soils.' (SSEW, 1983). Soils of this general description were found towards the north of the site, in conjunction with the approximate location of the second terrace drift deposits. Evesham soils are described as, 'Slowly permeable calcareous clayey soils. Some slowly permeable seasonally waterlogged non-calcareous clayey and fine loamy or fine silty over clayey soils. Landslips and associated irregular terrain locally.' (SSEW, 1983). Soils of this general description were commonly found towards the south of the site, coincident with the approximate location of the Oxford Clay deposits.

AGRICULTURAL LAND CLASSIFICATION

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

18. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Grade 2

19. Land of very good quality has been mapped in two units to the north and west of the survey area. The principal limitation to land quality here is soil droughtiness, although soil wetness is equally limiting in a number of cases. Soils are characterised by the soil pits, 2P and 5P (see Appendix III).

20. The soils in these areas are of two separate types. The first occurs towards the north of the site and comprises a topsoil of very slightly stony to slightly stony (up to 6% total flints by volume) medium sandy loam, sandy clay loam or medium clay loam. This passes to a similar upper subsoil which is slightly stony, containing up to 10% flints. Below this, in the

majority of cases, a sandy clay loam, medium or heavy clay loam horizon occurs which is gleyed or slightly gleyed in most cases and contains up to 18% flints by volume. Occasionally this horizon comprises a medium sandy loam or loamy medium sand. The lower subsoil comprises a slightly to moderately stony (up to 30% flints by volume) heavy clay loam or sandy clay loam, with loamy medium sand or medium sand occurring on occasion, at depth. These profiles were sometimes impenetrable to the soil auger and spade between 42 and 100cm. Given the local climate, these well drained (Wetness Class I) profiles are slightly restricted by soil droughtiness. The combination of soil characteristics and climatic conditions slightly reduces the potential water holding capacity of the soils. Soil droughtiness may result in a reduced yield potential, especially in drier years.

21. Some profiles, primarily towards the west of the site, are limited to a similar degree by soil wetness and soil droughtiness. The soils in these areas are distinct from those described above, especially in the lower subsoil. They comprise a very slightly stony medium clay loam topsoil. This passes to similarly stony, occasionally gleyed medium or heavy clay loam upper subsoil horizons. In most cases, below is a very slightly stony, gleyed sandy clay loam horizon which passes to a gleyed and slowly permeable, occasionally calcareous clay lower subsoil. Given the local climate, the depth to gleyed and slowly permeable horizons results in these profiles being assigned to Wetness Class II (see Appendix II), and Grade 2, when the medium workability status of the topsoils is taken into account. In addition, the interaction of climate and soil characteristics leads these areas to be placed in Grade 2 on the basis of soil droughtiness. The effects of this are described in para 20. Soil wetness restricts potential yield by affecting plant growth. It also adversely affects the versatility of the land by limiting the opportunities for cultivation or grazing.

Subgrade 3b

22. Land of moderate quality has been mapped over the remaining agricultural land at this site. The soils observed are of three separate types and are characterised by the soil pits, 1P, 3P and 4P (see Appendix III).

23. Towards the north of the site, where soil droughtiness is the principal limitation, the soils comprise a slightly stony (up to 10% flints by volume), medium clay loam or medium sandy loam topsoil. In the majority of cases, the subsoil below this was impenetrable, at the time of survey, to the soil auger and spade. From the pit observation, 1P (see Appendix III), the subsoils were found to comprise a hard, iron enriched, moderately stony (28% total flints) loamy medium sand upper subsoil, through which roots were observed to pass. Lower subsoil horizons of loamy medium sand contained less iron and 25% total flints by volume. These soils are well drained, Wetness Class I. The combination of soil characteristics and climatic parameters mean that profile available water is significantly reduced and the risk of soil droughtiness greater than for land assigned to Grade 2.

24. Towards the south of the site, on the slightly lower land, the principal limitation to land quality is soil wetness. In these areas, two separate soil types were observed. The most common occurs primarily towards the south east. It comprises a very slightly stony heavy clay loam or clay topsoil overlying a similar though gleyed and slowly permeable upper subsoil. This horizon causes these profiles to be poorly drained resulting in prolonged seasonal waterlogging (Wetness Class IV, see Appendix II). The lower subsoil horizons comprise sandier and stonier horizons which contain up to 50% total flints by volume. When the heavy

textured topsoils are considered alongside the soil drainage status, a classification of 3b is appropriate. Severe soil wetness may restrict access to the land and further reduce the flexibility of use and yield potential.

25. The remaining Subgrade 3b land occurs towards the south west of the site. This land is restricted by soil wetness with soils comprising a very slightly stony heavy clay loam or clay topsoil passing to a slightly stony, poorly structured gleyed and slowly permeable heavy clay loam or clay upper subsoil. The lower subsoil was of a similar nature except that, in the majority of cases it was highly calcareous, containing up to 10% soft limestone by volume. This was present to depth. The degree of soil wetness is such that, given the local climate, Wetness Class IV and Subgrade 3b are appropriate on the basis of soil wetness.

SOIL RESOURCES

Soil Units: Consideration for Restoration

26. The following section and the accompanying soil resources map describe the pattern of topsoil and subsoil resources on the site. It should be emphasised that the map is not a soil stripping map, but merely an illustration of the soil resources available for restoration on the site. Due to the natural variability of soils, the depths and volumes of topsoil and subsoil units given in Table 3 should be treated with caution. In general terms, all the available existing topsoil and subsoil resources should be retained for restoration purposes. When considering these details, it is important to remember that soils were sampled to a maximum depth of 120cm during survey work. It is likely that soil resources will extend below this depth in some cases.

Unit 1

27. Unit 1 soils occur in two separate blocks situated towards the north and west of the site. The topsoil in this unit extends across 16.2 ha. It comprises an average 30cm (range 22-34cm) of soil resource. This consists of dark greyish brown to brown (10YR4/2, 4/3) medium sandy loam, sandy clay loam or medium clay loam. It was found to be non-calcareous and very slightly to slightly stony (1-2% > 2 and 6cm, 2-10% total flints and ironstone by volume). The topsoil was moderately structured, comprising weakly developed coarse sub-angular peds of friable consistence throughout.

28. The subsoil resource in Unit 1 extends across 16.2 ha and measures an average 90cm (range 86-98cm). It comprises a range of textures including sandy clay loams, medium to heavy clay loams, medium sandy loams, loamy medium sands and sands. Typically the upper subsoil is brown or dark yellowish brown to yellowish brown or greyish brown (10YR4/3, 4/4, 5/2, 5/3, 5/4, or 5/6) in colour and of a medium to heavy clay loam or sandy clay loam texture, occasionally medium sandy loam. Beneath, the lower subsoils comprise a light brownish grey, light olive brown or brownish yellow, brown or yellowish brown (2.5Y 6/2, 5/4, 10YR4/3, 5/3, 5/4, 6/6), medium sandy loam, sandy clay loam or heavy clay loam horizon. Occasionally, especially towards the south west of the site, the lower subsoil horizon comprises strong brown or brownish yellow (7.5YR5/6 or 10YR6/6) loamy medium sand or medium sand. These subsoils were non-calcareous throughout. The upper subsoils are generally slightly stony, containing between 3 and 10% flints and ironstone by volume. The lower subsoils are

commonly slightly to moderately stony, containing between 5 and 25% flints and ironstone fragments by volume.

29. Evidence of wetness in the form of gleying occurs in the lower subsoil with common yellowish brown (10YR4/6, 5/6, and 5/8) ochreous mottles present. In addition, towards the south west of the site, gleying was observed in the upper subsoil. In some of the lower subsoil horizons the ochreous matrix colour of the soil may have masked evidence of wetness. Common manganese and ferric concretions are also present throughout the profile. Many of the observations in this unit were impenetrable to the soil auger above 120cm at the time of the survey, especially towards the north of the site. This was due to a combination of the stones in the profile, the dry soil conditions and cemented layers within the subsoil caused by the high iron content.

30. The majority of the subsoils have moderate structural conditions comprising moderately well developed coarse sub-angular peds of friable consistence. Where present, the medium sand lower subsoil was considered to have a good structure as described in Unit 2 (para.33) below.

Unit 2

31. Unit 2 soils are found in a strip across the centre of the site totalling 9.3 ha. The characteristics of the topsoil in Unit 2 are equivalent to those in Unit 1, as described in para. 27 above.

32. The subsoil resource of Unit 2 comprises an average 90 cm (range 85-91cm). Due to the impenetrable nature of these soils, the majority of the information for this unit is from a pit, 1P (see Appendix III). The upper subsoil comprises a dark yellowish brown to yellowish brown (10YR4/4, 4/6, 5/6) medium sandy loam or loamy medium sand. The lower subsoil comprises a dark yellowish brown to brown and strong brown (10YR4/4, 7.5YR4/4, 4/6, 5/8) loamy medium or coarse sand to depth. The unit is non-calcareous and moderately stony throughout (20-28% ironstone by volume). Evidence of soil wetness was rare and where present, comprised iron or manganese concretions only.

33. These subsoils vary in structural composition depending primarily on depth. The upper subsoil comprises moderately developed coarse angular blocky peds with a very firm consistence. Below this is a horizon containing weakly developed coarse platy peds of firm consistence. These give moderate structural conditions with the sandy textures. The lower subsoil from approximately 75cm has peds which are moderately developed and of coarse sub-angular shape. These peds give a good structural condition with the loamy sand textures present.

Unit 3

34. Unit 3 soils occur towards the south west of the site, on slightly lower land. The topsoil in this unit extends across 4.5 ha. It comprises an average 28cm (range 25-35cm) of soil resource. This consists of dark grey, dark greyish brown, greyish brown, to olive brown (10YR4/1, 4/2, 4/3 and 2.5Y 5/2 and 5/3) heavy clay loam or clay. This was found to be non-calcareous and very slightly stony (2-3% flints and ironstone by volume). The topsoil was

moderately structured, comprising weakly developed coarse sub-angular peds of friable consistence and moderately developed very coarse angular blocky peds of firm consistence.

35. The subsoil resource in Unit 3 comprises an average 92cm (range 87-92cm). The upper subsoil horizon commonly comprises an olive brown, brown, light brownish grey or grey (2.5Y 4/3, 4/4, 5/1, 6/1, 6/2, 10YR4/1, 4/3, 5/3, 6/2) clay or heavy clay loam with dark greyish brown to greyish brown (2.5Y 4/2, 5/2) ped face colours, as observed in the pit, 3P (see Appendix III). The lower subsoil is a grey, light brownish grey, light olive grey, pale olive or light grey (2.5Y 6/1, 6/2, 5Y 6/1,6/2, 6/4, 7/1) clay, which was observed to at least 1.2m on a number of occasions. In general, gleying was present from the upper subsoil, where common to many ochreous mottles (10YR 5/6, 5/8) were observed. The lower subsoil was observed to be calcareous. Other horizons, including the topsoil, were not calcareous. The subsoils were observed to be slightly stony in the upper subsoil (5-15% flints by volume) and lower subsoil (5% soft limestone fragments by volume).

36. The subsoils have moderate to poor structural conditions. In the upper subsoil, the peds observed were weakly developed coarse prismatic and friable (moderate structure). In the lower subsoil, the peds observed were moderately developed coarse angular in shape and of firm consistence (poor structure).

Unit 4

37. Unit 4 occurs in an area towards the south east of the site totalling 6.5 ha. The characteristics of the topsoil in Unit 4 are equivalent to those in Unit 3, as described in para. 34 above.

38. The subsoil resource in Unit 4 comprises an average 92cm (range 85-95cm). The upper subsoil horizon commonly comprises a dark grey and grey to light olive brown (2.5Y 4/1, 5/1, 5/2, 5/3, 5/4, 6/1) clay which passes to a similar though slightly more stony horizon. The lower subsoil commonly becomes lighter with depth passing through horizons of either heavy clay loam or sandy clay loam to medium sandy loam, loamy medium sand and eventually medium sand near 1.2m. These lower subsoils are commonly of dark yellowish brown and yellowish brown (10YR4/4, 4/6, 5/6 and 5/8) colours, which mask any evidence of wetness that may be present. The entire profile was non-calcareous. The upper subsoils were found to be gleyed, and slowly permeable, with many ochreous mottles present (10YR5/6). The clayey upper subsoils were very slightly to slightly stony with up to 10% flints by volume. In contrast the sandy lower subsoils were progressively more stony with depth, with 25-51% total flints and ironstone being recorded.

39. The upper subsoils are of poor structural condition; firm moderately developed coarse prismatic peds were observed. The lower subsoils are of a moderate condition. The peds were very friable and weakly developed coarse subangular blocky and coarse angular blocky. The structure of the very stony lower subsoil could not be assessed, but it has been assumed that moderate structural conditions are most likely.

Table 3: Soil Resource Data

Unit	Average Depth(cm)	Typical Textures	Area (ha)	Volume (m³)
Topsoil 1	30	MSL, SCL, MCL,	25.5	76500
Topsoil 2	28	HCL, C	11.0	30800
Total Volume				107300
Subsoil 1	90	SCL, MCL, HCL, MSL, LMS, MS	16.2	145800
Subsoil 2	90	MSL, LMS, LCS,	9.3	83700
Subsoil 3	92	HCL, C	4.5	41400
Subsoil 4	92	C, HCL, SCL, MSL, LMS, MS	6.5	59800
Total Volume				330700
Total Soil Resource				438000

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SOURCES OF REFERENCE

British Geological Survey (1864) *Sheet No. 46 NW. Solid Edition. 1:63,360 scale.*
BGS: London.

British Geological Survey (1971) *Sheet No. SP 83. Milton Keynes. Solid and Drift Edition.*
1:25,000 scale.
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Soils of South East England. 1:250,000 Scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils of South East England. Bulletin No. 15.*
SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2: Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a: Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b: Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4: Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5: Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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.

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.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

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

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

APPENDIX III

SOIL DATA

Contents:

Sample location map

Soil abbreviations - Explanatory Note

Soil Pit Descriptions

Soil boring descriptions (boring and horizon levels)

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

- 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)
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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 pedes are described using the following notation:

<u>degree of development</u>	WK: weakly developed	MD: moderately developed
	ST: strongly developed	
<u>ped size</u>	F: fine	M: medium
	C: coarse	VC: very coarse
<u>ped shape</u>	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 : WHITSUNDOLES FM BEDS MIN Pit Number : 1P

Grid Reference: SP92104040 Average Annual Rainfall : 607 mm
 Accumulated Temperature : 1409 degree days
 Field Capacity Level : 121 days
 Land Use : Barley
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MSL	10YR42 00	2	10	HR		WKCSAB	FR		
29- 53	LMS	10YR56 46	11	28	HR		MDCAB	VM	M	
53- 74	LMS	75YR44 58	4	25	HR		WKCPL	FM	M	
74-120	LMS	75YR46 00	2	25	HR		MDCSAB	FR	G	

Wetness Grade : 1 Wetness Class : I
 Gleying : cm
 SPL : cm

Drought Grade : 3B APW : 90 mm MBW : -22 mm
 APP : 67 mm MBP : -38 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WHITSUNDOLES FM BEDS MIN Pit Number : 2P

Grid Reference: SP92004020 Average Annual Rainfall : 607 mm
 Accumulated Temperature : 1409 degree days
 Field Capacity Level : 121 days
 Land Use : Barley
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	SCL	10YR42 43	2	4	HR		WKCSAB	FR		
28- 46	SCL	10YR44 00	0	10	HR	F	MDCSAB	FR	M	
46- 75	SCL	10YR44 54	0	5	HR	C	MDCSAB	FR	M	
75-110	SCL	25Y 62 54	0	5	HR	M	MDCSAB	FR	M	
110-120	LMS	75YR56 00	0	10	HR			FR	G	

Wetness Grade : 1 Wetness Class : I
 Gleying : 46 cm
 SPL : cm

Drought Grade : 2 APW : 140mm MBW : 28 mm
 APP : 105mm MBP : 0 mm

FINAL ALC GRADE : 2
 MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WHITSUNDOLES FM BEDS MIN Pit Number : 3P

Grid Reference: SP92004010 Average Annual Rainfall : 607 mm
 Accumulated Temperature : 1409 degree days
 Field Capacity Level : 121 days
 Land Use : Barley
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	C	10YR42 43	1	3	HR		WKCSAB	FR		
33- 57	HCL	25Y 43 44	0	15	HR	C	WKCPR	FR	M	
57-120	C	25Y 61 62	0	5	SLST	M	MDCAB	VM	P	Y

Wetness Grade : 3B Wetness Class : III
 Gleying : 33 cm
 SPL : 33 cm

Drought Grade : 2 APW : 127mm MBW : 15 mm
 APP : 104mm MBP : -1 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : WHITSUNDOLES FM BEDS MIN Pit Number : 4P

Grid Reference: SP92404000 Average Annual Rainfall : 607 mm
 Accumulated Temperature : 1409 degree days
 Field Capacity Level : 121 days
 Land Use : Set-aside
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 26	C	10YR42 00	0	3	HR		MDVCAB	FM		
26- 57	C	25Y 52 53	0	3	HR	M	MDCPR	FM	P	
57- 65	SCL	10YR46 44	0	25	HR		WK CAB	VF	M	
65- 82	LMS	10YR46 44	0	25	HR		WKCSAB	VF	M	
82-120	MS	10YR58 00	0	51	HR				M	

Wetness Grade : 3B Wetness Class : III
 Gleying : 26 cm
 SPL : 26 cm

Drought Grade : 3A APW : 99 mm MBW : -13 mm
 APP : 94 mm MBP : -11 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : WHITSUNDOLES FM BEDS MIN Pit Number : 5P

Grid Reference: SP92304050 Average Annual Rainfall : 607 mm
 Accumulated Temperature : 1409 degree days
 Field Capacity Level : 121 days
 Land Use : Barley
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	MCL	10YR42 00	2	4	HR		WKCSAB	FR		
30- 45	MCL	10YR44 00	0	5	HR	F	MDCSAB	FR	M	
45-100	SCL	10YR43 53	2	18	HR	C	MDCSAB	VM	M	

Wetness Grade : 1 Wetness Class : I
 Gleying : 45 cm
 SPL : cm

Drought Grade : 2 APW : 123mm MBW : 11 mm
 APP : 106mm MBP : 1 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	GLEY	SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	LIMIT	
1	SP92004060	BAR		40		1	1	99	-13	104	-1	3A			DR	2	IMP 75 SEE 5P
1P	SP92104040	BAR				1	1	90	-22	67	-38	3B			DR	3B	PIT100 AUG120
2	SP92104060	BAR		35		2	1	82	-30	86	-19	3B			DR	2	IMP 60 SEE 5P
2P	SP92004020	BAR		46		1	1	140	28	105	0	2			DR	2	PIT 95 AUG 120
3	SP92204060	BAR		S38		1	1	86	-26	91	-14	3B			DR	2	IMP 60 SEE 5P
3P	SP92004010	BAR		33	33	3	3B	127	15	104	-1	2			WE	3B	PIT 85 AUG 120
4	SP92304060	BAR		50	65	2	2	133	21	110	5	2			WD	2	
4P	SP92404000	SAS		26	26	3	3B	99	-13	94	-11	3A			WE	3B	PIT110 AUG120
5	SP92404058	BAR				1	1	86	-26	88	-17	3B			DR	2	IMP 53 SEE 5P
5P	SP92304050	BAR		45		1	1	123	11	106	1	2			DR	2	PIT 78 AUG100
6	SP92004050	BAR				1	1	55	-57	55	-50	4			DR	3B	IMP 31 SEE 1P
7	SP92104050	BAR				1	1	58	-54	58	-47	4			DR	3B	IMP 33 SEE 1P
8	SP92204050	BAR		34		1	1	87	-25	91	-14	3B			DR	2	IMP 65 SEE 5P
9	SP92304050	BAR				1	1	74	-38	74	-31	3B			DR	2	IMP 45 SEE 5P
10	SP92404050	BAR		35	35	3	3A	136	24	102	-3	2			WE	3A	
11	SP92004040	BAR		29		2	2	108	-4	111	6	3A			WD	2	IMP 90
12	SP92104040	BAR				1	1	49	-63	49	-56	4			DR	3B	IMP 30 SEE 1P
13	SP92204040	BAR		45		1	1	93	-19	101	-4	3A			DR	2	IMP 65 SEE 5P
14	SP92304040	BAR	S	1		1	1	72	-40	72	-33	3B			DR	2	IMP 42 SEE 5P
15	SP91804030	BAR		50	75	2	2	138	26	115	10	2			WD	2	SEE 2P
16	SP91904030	BAR		33	70	2	2	120	8	113	8	2			WD	2	IMP 95 SEE 2P
17	SP92004030	BAR				1	1	52	-60	52	-53	4			DR	3B	IMP 30 SEE 1P
18	SP92104030	BAR				1	1	52	-60	52	-53	4			DR	3B	IMP 30 SEE 1P
19	SP92204030	BAR				1	1	101	-11	82	-23	3A			DR	3A	
20	SP92304030	BAR				1	1	51	-61	51	-54	4			DR	3B	IMP 30 SEE 1P
21	SP92404030	BAR		35	35	3	3A	92	-20	102	-3	3A			WE	3A	IMP 67
22	SP91804020	BAR				1	1	61	-51	61	-44	4			DR	3B	IMP 35 SEE 1P
23	SP91904020	BAR	S	1	60	1	1	149	37	115	10	1			DR	2	BDR G1 SEE 2P
24	SP92004020	BAR	S	1	75	1	1	152	40	114	9	2			DR	2	SEE2P SLGL45
25	SP92104020	BAR				1	1	90	-22	95	-10	3B			DR	2	IMP 61 SEE 2P
26	SP92204020	BAR	W	2		1	1	52	-60	52	-53	4			DR	3B	IMP 30 SEE 1P
27	SP92304020	BAR		55		1	1	147	35	111	6	2			DR	2	SEE 5P
28	SP92404020	BAR				1	1	56	-56	56	-49	4			DR	3B	IMP 35 SEE 1P
29	SP91924010	BAR	S	1	28	28	3	3B	126	14	104	-1	2		WE	3B	SEE 3P
30	SP92004010	BAR	S	1	33	33	3	3B	127	15	104	-1	2		WE	3B	SEE 3P
31	SP92104010	BAR		25	25	3	3B	124	12	101	-4	2			WE	3B	SPL 25 SEE 3P
32	SP92304010	SAS		25	25	3	3B	126	14	100	-5	2			WE	3B	SEE 4P
33	SP92183997	WHT		30	30	3	3B	115	3	108	3	3A			WE	3B	SEE 4P
34	SP92304000	SAS		25	25	3	3B	125	13	102	-3	2			WE	3B	SEE 4P
35	SP92404000	SAS		25	25	3	3B	104	-8	96	-9	3A			WE	3B	SEE 4P
36	SP92183990	WHT		35		2	2	80	-32	80	-25	3B			WD	2	IMP 50 SEE 2P
37	SP92403990	PGR		28	28	3	3B	135	23	101	-4	2			WE	3B	SEE 4P

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	LIMIT	
38	SP92183980	OSR	30	30	3	38	125	13	102	-3	2			WE	38	SEE 3P	
39	SP92403980	PGR	30	30	3	38	100	-12	105	0	3A			WE	38	SEE 4P	
40	SP92183970	OSR	45		1	1	88	-24	91	-14	38			DR	2	IMP 55 SEE 2P	
41	SP92073967	OSR	35	105	2	2	147	35	115	10	1			WE	2	SEE 2P/3P	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT	COL.	GLEYS	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
1	0-25	ms1	10YR43 00						1	0	HR	3						BORDER SCL SEE 5P
	25-40	sc1	10YR44 00						0	0	HR	5			M			BORDER MSL
	40-70	sc1	10YR54 52 10YR58 00 C				00MN00 00 Y		0	0	HR	10			M			
	70-75	ms1	10YR44 00 10YR58 00 F				00MN00 00		0	0	HR	25			M			IMP FLINTS 75
1P	0-29	ms1	10YR42 00						2	0	HR	10	WKCSAB	FR				PSD
	29-53	lms	10YR56 46						11	0	HR	28	MDCAB	VM M				WET SIEVED STONES
	53-74	lms	75YR44 58						4	0	HR	25	WKCP	FM M				WET SIEVED STONES
	74-120	lms	75YR46 00						2	0	HR	25	MDCSAB	FR G				
2	0-22	ms1	10YR43 00						2	0	HR	6						BORDER SCL SEE 5P
	22-35	ms1	10YR44 00 10YR56 00 F						0	0	HR	5			M			BORDER SCL
	35-55	sc1	10YR52 53 10YR58 00 C				00MN00 00 Y		0	0	HR	10			M			
	55-60	sc1	10YR58 00 00MN00 00 C						0	0	HR	30			M			IMP FLINTS 60
2P	0-28	sc1	10YR42 43						2	0	HR	4	WKCSAB	FR				MCL BORDER PSD
	28-46	sc1	10YR44 00 10YR46 56 F						0	0	HR	10	MDCSAB	FR M				PSD
	46-75	sc1	10YR44 54 75YR58 00 C				10YR52 53 Y		0	0	HR	5	MDCSAB	FR M				PSD
	75-110	sc1	25Y 62 54 10YR58 00 M				00MN00 00 Y		0	0	HR	5	MDCSAB	FR M				PSD
110-120	lms	75YR56 00						0	0	HR	10			FR G			G STRUCTURE FROM 1P	
3	0-28	mc1	10YR42 43						1	0	HR	5						SL SANDY SEE 5P
	28-38	sc1	10YR44 00 10YR56 00 F						0	0	HR	5			M			
	38-60	sc1	10YR54 00 75YR58 00 C				00MN00 00 S		0	0	HR	15			M			IMP FLS 60 BDR HCL
3P	0-33	c	10YR42 43						1	0	HR	3	WKCSAB	FR				PSD
	33-57	hc1	25Y 43 44 10YR58 00 C				25Y 42 52 Y		0	0	HR	15	WKCP	FR M	Y		Y	COMP MDCSAB-AB PSD
	57-120	c	25Y 61 62 10YR56 00 M					Y	0	0	SLST	5	MDCAB	VM P	Y		Y	Y
4	0-30	mc1	10YR42 00						1	0	HR	3						SL SANDY SEE 2P/3P
	30-50	mc1	10YR54 53						0	0	HR	5			M			BORDER SCL
	50-65	hc1	25Y 53 54 10YR58 00 C				00MN00 00 Y		0	0	HR	15			M			SANDY
	65-110	c	05Y 61 62 10YR58 00 M				00MN00 00 Y		0	0	HR	5			P		Y	Y
	110-120	sc1	05Y 71 00 75YR58 00 M					Y	0	0	HR	30			M			Y
4P	0-26	c	10YR42 00						0	0	HR	3	MDVCAB	FM				
	26-57	c	25Y 52 53 10YR56 00 M				25Y 42 41 Y		0	0	HR	3	MDCPR	FM P			Y	COMP MDCAB FM
	57-65	sc1	10YR46 44						0	0	HR	25	WKCB	VF M				WET SIEVED STONES
	65-82	lms	10YR46 44						0	0	HR	25	WKCSAB	VF M				WET SIEVED PSD
	82-120	ms	10YR58 00						0	0	HR	51			M			SIEVED WATER 110
5	0-33	mc1	10YR42 00						1	0	HR	3						SEE 5P SL SANDY
	33-53	mc1	10YR54 00 10YR56 00 F						0	0	HR	5			M			IMP FLINT 53 HCL 52
5P	0-30	mc1	10YR42 00						2	0	HR	4	WKCSAB	FR				SLIGHTLY SANDY
	30-45	mc1	10YR44 00 75YR46 00 F				00FE00 00		0	0	HR	5	MDCSAB	FR M				
	45-100	sc1	10YR43 53 10YR56 58 C				00MN00 00 Y		2	0	HR	18	MDCSAB	VM M				IMP PIT 78 AUG 100

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		IMP
6	0-31	mc1	10YR42 43						0	0	HR	2					IMPFLINTS 31 SEE 1P
7	0-33	mc1	10YR43 00						0	0	HR	2					IMPFLINTS 33 SEE 1P
8	0-34	ms1	10YR42 43						0	0	HR	3					BORDER MCL SEE 5P
	34-53	mc1	10YR53 44	75YR46 00 C				Y	0	0	HR	10		M			BORDER SCL
	53-65	lms	75YR44 00				00FE00 00		0	0	HR	15		M			BDR MSL IMP FLS 65
9	0-30	mc1	10YR42 00						0	0	HR	5					SL SANDY SEE 5P
	30-45	mc1	10YR44 54						0	0	HR	5		M			BDR MSL IMPFLINT 45
10	0-25	mc1	10YR42 00						1	0	HR	5					BORDR SCL SEE 4P/5P
	25-35	hc1	10YR44 54	00MN00 00 F					0	0	HR	5		M			SLIGHTLY SANDY
	35-55	c	10YR53 54	10YR56 58 C			00MN00 00 Y		0	0	HR	5		P		Y	
	55-120	sc1	10YR44 54	75YR68 00 C			00MN00 00 S		0	0	HR	15		M			BORDER HCL
11	0-29	mc1	10YR42 00						0	0	HR	2					SL SANDY SEE 2P
	29-60	mc1	25Y 53 00	10YR56 00 C			00MN00 00 Y		0	0	HR	5		M			SLIGHTLY SANDY
	60-70	sc1	10YR66 00						0	0	HR	15		M			BORDER HCL
	70-90	ms	10YR68 00						0	0	HR	15		M			IMP FLINTS 90
12	0-30	mc1	10YR42 43						0	0	HR	10					IMPFLINTS 30 SEE 1P
13	0-27	ms1	10YR42 43						0	0	HR	4					BORDER MCL SEE 5P
	27-45	mc1	10YR44 00						0	0	HR	4		M			SLIGHTLY SANDY
	45-65	mc1	10YR53 00	75YR46 00 C				Y	0	0	HR	10		M			BDR SCL IMP FLS 65
14	0-32	mc1	10YR42 00						0	0	HR	2					SEE 5P SL SANDY
	32-42	mc1	10YR43 44				00MN00 00		0	0	HR	2		M			IMP FLINTS 42
15	0-33	mc1	10YR42 00						0	0	HR	2					SL SANDY SEE 2P/3P
	33-50	mc1	10YR54 00	10YR46 00 F			00MN00 00		0	0	HR	5		M			SLIGHTLY SANDY
	50-75	hc1	10YR54 53	10YR58 00 C			00MN00 00 Y		0	0	HR	5		M			BORDER SCL
	75-120	c	25Y 62 00	75YR58 00 M				Y	0	0	HR	5		P		Y	SLIGHTLY SANDY
16	0-33	mc1	10YR42 00						0	0	HR	3					BDR SCL SEE 2P/3P
	33-45	mc1	10YR54 52	10YR56 00 C				Y	0	0		0		M			SLIGHTLY SANDY
	45-70	sc1	10YR53 00	75YR56 00 C			00MN00 00 Y		0	0	HR	3		M			
	70-95	c	25Y 52 00	75YR56 00 M			00MN00 00 Y		0	0	HR	5		P		Y	IMPFLINT 95 SLSANDY
17	0-30	mc1	10YR42 43						0	0	HR	3					IMPFLINTS 30 SEE 1P
18	0-30	mc1	10YR42 43						0	0	HR	3					IMPFLINTS 30 SEE 1P
19	0-33	ms1	10YR42 43						0	0	HR	15				Y	SEE 1P
	33-53	ms1	10YR44 56						0	0	SLST	25		M		Y	
	53-120	lcs	10YR44 00						0	0	SLST	20		M		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----		PED		----STONES----			STRUCT/ CONSIST	SUBS			CALC		
				COL	ABUN	CONT	COL.	GLE	>2	>6		LITH	TOT	STR		POR	IMP
20	0-30	mc1	10YR42 43						0	0	HR	5				Y	IMPFLS 30 1P SLSNDY
21	0-35	mc1	10YR42 43						0	0	HR	3					SEE 4P
	35-60	c	10YR41 43	10YR56 00 C		00M00 00 Y			0	0	HR	2		P		Y	
	60-67	c	10YR51 53	10YR56 00 C		00M00 00 Y			0	0	HR	2		P		Y	IMP FLINTS 67
22	0-35	mc1	10YR42 00						1	0	HR	3					IMPFLINTS 35 SEE 1P
23	0-30	mc1	10YR42 00						0	0	HR	2					SL SANDY SEE 2P
	30-60	mc1	10YR44 54	10YR56 00 F					0	0	HR	3		M			SL SANDY BORDER HCL
	60-100	hc1	10YR53 54	75YR58 00 C				Y	0	0	HR	5		M			BORDER SCL
	100-120	hc1	10YR52 00	10YR58 00 M				Y	0	0	HR	15		M			SLIGHTLY SANDY
24	0-30	mc1	10YR42 00						0	0	HR	2					SLIGHTLYSANDY SEE2P
	30-45	mc1	10YR44 54						0	0	HR	5		M			
	45-75	hc1	10YR54 00	10YR56 00 C		00M00 00 S			0	0	HR	5		M			BORDER SCL
	75-100	sc1	10YR62 54	10YR58 00 C		00M00 00 Y			0	0	HR	5		M			BORDER HCL
	100-120	ms1	10YR56 00						0	0	HR	5		M			
25	0-32	mc1	10YR42 43						0	0	HR	3					SLIGHTLYSANDY SEE2P
	32-61	sc1	10YR56 00						0	0	HR	10		M			IMP FLINTS 61
26	0-30	mc1	25Y 53 43						0	0	HR	3					IMPFLINTS 30 SEE 1P
27	0-32	mc1	25Y 53 44						0	0	HR	3					
	32-55	hc1	10YR54 56			00FE00 00			0	0	HR	5		M			SLIGHTLY SANDY
	55-86	sc1	10YR61 00	10YR56 00 M				Y	0	0	HR	10		M			
	86-120	sc1	10YR54 56						0	0	SLST	15		M		Y	+5% FLINTS
28	0-26	c	25Y 43 00						0	0	HR	2					SEE 4P
	26-35	c	25Y 54 00	10YR56 00 F					0	0	HR	10		M			IMP FLINTS 35
29	0-28	hc1	10YR42 52						0	0	HR	3					SEE 3P
	28-70	c	10YR53 00	10YR56 00 M				Y	0	0		0		P		Y	
	70-120	c	05Y 61 00	10YR58 68 M				Y	0	0	SLST	5		P		Y	Y
30	0-33	hc1	10YR42 00						0	0	HR	2					SEE 3P
	33-60	c	25Y 62 00	10YR58 00 M				Y	0	0	HR	5		P		Y	
	60-120	c	25Y 61 00	10YR58 68 M				Y	0	0	SLST	5		P		Y	Y
31	0-25	hc1	10YR42 00						0	0	HR	3					BORDER MCL SEE 3P
	25-60	c	10YR62 00	10YR58 00 M		00M00 00 Y			0	0		0		P		Y	Y
	60-100	c	25Y 61 00	10YR58 00 M				Y	0	0	SLST	10		P		Y	Y
	100-120	zc	05Y 71 00	10YR68 00 M				Y	0	0		0		P		Y	Y
32	0-25	hc1	10YR42 00						0	0	HR	2					SEE 4P
	25-57	c	25Y 61 54	10YR58 00 M		00M00 00 Y			0	0	HR	2		P		Y	
	57-90	sc1	10YR54 00	10YR58 00 M		00M00 00 Y			0	0	HR	25		M			
	90-120	ms1	10YR56 00						0	0	HR	40		M			

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		IMP
33	0-30	hc1	10YR41 00						0	0	HR	2					
	30-55	c	25Y 41 51	10YR58 00	M		00M00 00	Y	0	0		0	P			Y	
	55-75	hc1	25Y 51 00	10YR58 00	M		00M00 00	Y	0	0	HR	5	M				SLIGHTLY SANDY
	75-120	lms	10YR56 00						0	0	HR	40	M				WET FROM 90
34	0-25	hc1	25Y 42 00						0	0	HR	2					BORDER C SEE 4P
	25-40	c	25Y 53 00	10YR58 00	C			Y	0	0	HR	2	P			Y	
	40-70	c	25Y 51 52	10YR58 00	M		00M00 00	Y	0	0	HR	2	P			Y	
	70-90	sc1	10YR54 00	10YR58 00	M		00M00 00	S	0	0	HR	25	M				GRITTY
	90-120	ms1	10YR56 00				00M00 00		0	0	HR	40	M				
35	0-25	c	25Y 52 53						0	0	HR	2					SEE 4P
	25-45	c	25Y 52 53	10YR58 00	C		00M00 00	Y	0	0	HR	2	P			Y	
	45-60	c	25Y 42 00	10YR58 00	M		00M00 00	Y	0	0	HR	10	P			Y	
	60-80	sc1	10YR54 00	10YR58 00	C		00M00 00	S	0	0	HR	25	M				
	80-120	ms	10YR56 00				00M00 00		0	0	HR	50	M				
36	0-35	hc1	10YR41 42	10YR46 00	F				0	0	HR	3					
	35-50	hc1	10YR53 00	10YR56 00	C			Y	0	0	HR	25	M				IMP FLINTS 50
37	0-28	hc1	10YR42 43						0	0	HR	2					
	28-55	c	25Y 41 51	10YR58 00	C		00M00 00	Y	0	0	HR	2	P			Y	
	55-75	sc1	10YR43 53	10YR58 00	C		00M00 00	Y	0	0	HR	25	M				BORDER MCL
	75-115	ms1	10YR64 66	10YR68 00	C			Y	0	0	HR	25	M				BORDER SCL
	115-120	mc1	05Y 62 00	10YR58 00	M		00M00 00	Y	0	0		0	M				
38	0-30	hc1	10YR42 00						0	0	HR	3					SEE 3P
	30-65	c	25Y 51 61	10YR58 00	M			Y	0	0	HR	5	P			Y	Y
	65-120	c	05Y 61 00	10YR58 00	M			Y	0	0	SLST	5	P			Y	Y
39	0-30	hc1	10YR43 00						0	0	HR	2					
	30-55	c	10YR41 43	10YR56 00	C		00M00 00	Y	0	0		0	P			Y	
	55-75	hc1	10YR53 54	10YR58 00	C		00M00 00	Y	0	0	HR	20	M				SLIGHTLY SANDY
	75-80	lms	10YR62 00	10YR68 00	C			Y	0	0	HR	50	M			Y	IMP GRAVELLY 80
40	0-30	mc1	10YR42 00						0	0	HR	3					SEE 2P
	30-45	mc1	10YR53 54	10YR56 00	F				0	0	HR	3	M				
	45-55	hc1	10YR52 53	10YR56 00	C		00M00 00	Y	0	0	HR	5	M				IMP FLINT 55
41	0-35	mc1	10YR42 00						0	0	HR	3					SL SANDY SEE 2P/3P
	35-65	hc1	10YR53 00	10YR56 00	C		00M00 00	Y	0	0	HR	3	M				SLIGHTLY SANDY
	65-105	sc1	10YR52 62	10YR56 58	M		00M00 00	Y	0	0	HR	5	M				BORDER HCL
	105-120	c	05Y 62 64	75YR58 00	M			Y	0	0	SLST	5	P			Y	Y