

LAND AT MARHAM, NORFOLK

Agricultural Land Classification and Soil Resource Survey

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LAND AT MARHAM, NORFOLK: Agricultural Land Classification and Soil Resource Survey

1. INTRODUCTION

This report provides detailed information on the agricultural land quality and soil resources within the proposed quarry at Marham, Norfolk.

The survey area is approximately 340 ha in extent and is centred on OS Grid Reference TF 698 110.

2. SITE DESCRIPTION

2.1 Altitude & Relief

The majority of the site is generally level with slight undulations and lies at an altitude of approximately 4 mAOD. No slopes in the agricultural areas are greater than 1° and hence gradient does not constitute a limitation to the agricultural usage of the site.

2.2 Climate

Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics. The key climatic variables used for grading this site are given in Table 1 and were obtained from the published 5 km grid dataset using the standard interpolation procedures (Meteorological Office, 1989). As the site was relatively large the climatic data was calculated for various locations within the site to determine if any significant differences occurred due to location.

Location within site	Centre	North	South	West	East
Grid reference	TF 698 110	TF 698 117	TF 698 102	TF 690 104	TF 703 113
Altitude (mAOD)	4	4	4	4	4
Accumulated temperature (day °C Jan - June)	1436	1436	1436	1436	1436
Average annual rainfall (mm)	616	613	619	616	619
Field capacity days (days)	120	120	121	120	121
Moisture deficit, wheat (mm)	116	116	116	116	116
Moisture deficit, potatoes (mm)	111	112	111	111	111
Overall climatic grade	1	1	1	1	1

The climatic criteria are considered first when classifying land as climate can be overriding irrespective of favourable site or soil conditions. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall and accumulated temperature. The combination of rainfall and temperature at this site do not result in any limitation to the agricultural quality of the land.

The Environment Agency Flood-map-for-planning.service.gov.uk shows large areas of the survey area to be in Flood Risk Zones 2 and 3. Therefore there is a likelihood of some flooding within land in the survey area. However, there is insufficient local information on the incidence, timing and duration of flooding to be used to assess any flood risk limitation on the quality of the agricultural land at present. Therefore the land has been graded without any reference to flood risk.

2.3 Published Soils Information

The 1:250 000 scale reconnaissance soil map of the area (Soil Survey, 1983) shows the majority of the site to be mapped as soils of the Isleham 2 Association with a small areas of the Blackwood Association mapped in the south west and the Wickham 2 Association in the south of the survey area. Isleham 2 Association soils are briefly described by the Soil Survey (1983) as 'Deep permeable sandy and peaty soils affected by groundwater. Very complex soil pattern with hummock and hollow microrelief locally'. The Blackwood Association soils are described as 'Deep permeable sandy and coarse loamy soils' and the Wickham 2 Association as

'Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.'

The majority of the survey area is mapped as Grade 3 quality land with a small area on the western edge mapped as Grade 4 on the Provisional Agricultural Land Classification maps issued by the Ministry of Agriculture, Fisheries and Food (MAFF, 1972). However, these provisional maps were produced prior to the issuing of revised guidelines for the grading of agricultural land in 1988 and before the subdivision of Grade 3 land. These maps were not intended for site specific grading and should only be treated as indicative of the agricultural land quality of large areas.

2.4 Land Use

At the time of the survey a variety of crops were present comprising oil-seed rape, potatoes, maize, sugar beet, wheat, barley, carrots, onions and field beans. Two fields in the north of the survey area comprised pasture with grazing cattle. The fields are divided by tracks and ditches.

3. SURVEY METHODS

The survey was undertaken during July 2017. Soil profiles were examined using a hand auger and/or spade to a depth of 120 cm where possible. The fieldwork was conducted at a detailed density of one auger boring per hectare on a 100 m grid with the locations being determined using a hand held GPS device (Figure 1 & Appendix I). Soil pits were dug in representative soil types (Appendix II) to assess subsoil structure and allow the preparation of a statement of soil physical characteristics (Appendix III).

4. SOIL PHYSICAL CHARACTERISTICS

This survey showed the site to comprise a complex pattern of soil types with six main soil types identified, however, four of these soil types contained variants of the main type. The full descriptions of these soil types and variants are given below and the distribution of the main soil types is shown in Figure 2. The statement of soil physical characteristics is given at Appendix III.

4.1 *Soil Type 1*

Soil Type 1 comprises a mineral topsoil which overlies sand.

Soil Type 1 Variant i

This soil type has a medium sandy loam, loamy medium sand, or very occasionally sandy clay loam topsoil which is very slightly stony which overlies a slightly stony medium sand. Profiles are therefore well drained and assessed as Wetness Class I. Such profiles are inherently droughty and thus have a significant droughtiness limitation which restricts this soil type to Subgrade 3b. However, occasionally where the topsoil is relatively thick and of medium sandy loam or sandy clay loam texture the moisture availability for crop growth is increased and hence the droughtiness limitation is only moderate restricting such profiles to Subgrade 3a.

Soil Type 1 Variant ii

This variant of the main soil type is similar to *variant i* but the sandy subsoil overlies a lower clay subsoil horizon. This clay lower subsoil is gleyed and mottled and constitutes a slowly permeable layer. However, this clay horizon is normally deep in the soil profile and hence this variant is still well drained being assessed as Wetness Class I or II. Therefore droughtiness is still the limiting factor for the quality of land within this soil type and profiles of this soil type are usually of Subgrade 3a quality with occasional profiles of Subgrade 3b where the clay is very deep in the soil profile and hence the moisture availability is reduced.

4.2 *Soil Type 2*

Soil Type 2 has a mineral topsoil which overlies a gleyed and mottled slowly permeable clay subsoil.

Soil Type 2 Variant i

A very slightly stony sandy clay loam or medium sandy loam topsoil directly overlies a mottled and gleyed clay subsoil which constitutes a slowly permeable layer. The clay subsoil and the topsoil are occasionally calcareous. Profiles of this soil type are assessed as predominantly Wetness Class III and hence are imperfectly drained. Therefore a wetness and workability limitation restricts such profiles to Grade 2 if the topsoil upper subsoil are calcareous or Subgrade 3a where the soils are non-

calcareous. Additionally profiles of this soil type are equally limited by a droughtiness limitation.

Soil Type 2 Variant ii

This variant of the main soil type differs from *Variant i* by having an upper subsoil horizon comprising a very slightly stony sandy clay loam or medium sand.

Therefore the slowly permeable clay lower subsoil horizon is usually deep in the profile and hence such profiles are assessed as Wetness Class I or occasionally II. Drought limits soil profiles of this type to Grade 2 or Subgrade 3a with a single profile having no limitations and hence is of Grade 1 quality.

4.3 *Soil Type 3*

This soil type has an organically enriched loamy topsoil or peat overlying a mottled and gleyed clay subsoil. The clay subsoil constitutes a slowly permeable layer and hence such profiles are predominantly assessed as Wetness Class III. However, where the topsoil is particularly deep, particularly in peat areas, the depth to the slowly permeable layer is such that the profiles are assessed as Wetness Class I or II. Therefore soil profiles of this soil type are generally of Grade 2 quality due to a wetness and workability limitation. But where the profiles are better drained no limitation is present and hence these profiles are of Grade 1 quality.

4.4 *Soil Type 4*

This soil type has a peat or peaty topsoil which overlies sand.

Soil Type 4 Variant i

A stoneless or very slightly stony humified peat topsoil overlies a slightly stony medium sand subsoil. Occasionally a further humified peat or loamy medium sand upper subsoil horizon is present above the medium sand subsoil. Profiles of this soil type are well drained and assessed as Wetness Class I. Drought limits a small number of profiles to Grade 2 quality where the topsoil is thin over the sand but the majority of profiles of this soil type are of Grade 1 quality.

Soil Type 4 Variant ii

This variant of the general soil type differs by the sand subsoil overlying a gleyed and mottled clay textured lower subsoil horizon. This clay lower subsoil constitutes

a slowly permeable layer but is usually deep in the soil profile and hence such profiles are assessed as Wetness Class I or II. Very occasionally the upper subsoil is very thin and the profile is assessed as Wetness Class III. Predominantly profiles of this soil type are of Grade 1 quality with wetness and workability restricting a single profile to Grade 2 and drought also restricting a small number of profiles to Grade 2.

Soil Type 4 Variant iii

The variation of this soil type from the general soil type is that the topsoil is not peat but of peaty loam or loamy peat texture. This topsoil overlies medium sand or very occasionally sandy silt loam. Profiles of this soil type are well drained and assessed as Wetness Class I. Therefore many of the profiles of this soil type are of Grade 1 quality with drought restricting a number of profiles of this type to Grade 2 or very occasionally Subgrade 3a quality where the topsoil overlying the sand is relatively thin.

4.5 *Soil Type 5*

This soil type comprises an organic mineral topsoil which overlies sand.

Soil Type 5 Variant i

A very slightly stony organically enriched loamy medium sand or medium sandy loam topsoil overlies a slightly stony medium sand subsoil. Profiles of this type are well drained and assessed as Wetness Class I. Drought restricts this soil type predominantly to Subgrade 3a, however, where the topsoil is relatively thick more moisture is available for plant growth and occasionally such profiles are of Grade 1 or 2 quality.

Soil Type 5 Variant ii

This variant is similar to *Variant i* but the upper sandy subsoil overlies a gleyed and mottled clay or sandy clay lower subsoil. This clay is usually deep in the soil profile and therefore does not impede drainage. Such profiles are assessed as Wetness Class I or II. Drought is the limitation to the quality of many profiles of this soil type restricting such profiles to Grade 2 or very occasionally Subgrade 3a quality.

4.6 *Soil Type 6*

This soil type comprises deep humified peat. Occasionally a mineral topsoil overlies this deep peat. The peat is generally well humified with occasionally at depth the remains of wood material being evident. Deep peat soil profiles are assessed as Wetness Class I or II in this climatic area and hence do not have a wetness or workability limitation. Drought is also not a restriction on the quality of the land for such soil types, hence, soils of *Type 6* are all of Grade 1 quality.

5. **AGRICULTURAL LAND CLASSIFICATION**

The quality of the agricultural land within the proposed site was assessed using the revised guidelines and criteria for grading the quality of agricultural land issued by the Ministry of Agriculture, Fisheries and Food (MAFF, 1988). Auger boring information for each sample point (Figure 1) is shown at Appendix I and soil pit profile descriptions are given at Appendix II. The agricultural land classification and extent of each grade or subgrade is shown at Figure 3.

The limiting factor for the quality of the majority of the agricultural land within the survey area is droughtiness.

5.1 **Grade 1** (excellent quality agricultural land)

Much of the land in the north and centre of the survey area is of Grade 1 quality. The soils are well drained and often comprise organic or organically enriched topsoil overlying further organic material or clay textured horizons. Such profiles provide sufficient moisture retention to supply the growing crop requirements. Hence for such soil profiles there are no wetness and workability or droughtiness limitations and such land is of Grade 1 quality.

5.2 **Grade 2** (very good quality agricultural land)

Land of Grade 2 quality is found in areas where the land is assessed as Wetness Class III which together with the topsoil texture and the prevailing climatic conditions at the survey area result in a slight wetness and workability limitation restricting such land to Grade 2 quality. Additionally land which has only a slight droughtiness limitation is also restricted to Grade 2 quality.

5.3 Subgrade 3a (good quality agricultural land)

Subgrade 3a quality land is associated with land of *Soil Type 2 Variant i* which is assessed as Wetness Class III and together with the topsoil texture and the prevailing climatic conditions at the survey area result in a moderate wetness and workability limitation which restricts such profiles to Subgrade 3a quality. Additionally the moderately droughty profiles of other soil types are restricted to Subgrade 3a quality.

5.4 Subgrade 3b (moderate quality agricultural land)

Land of Subgrade 3b quality is associated with areas of *Soil Type 1 Variant i* and occasionally *Variant ii*. These soil profiles have a medium sandy loam or loamy medium sand mineral topsoil and a sand textured subsoil, hence such profiles cannot provide all the moisture required by growing crops and have a significant droughtiness limitation restricting such profiles to Subgrade 3b.

5.5 Non-Agricultural Land

Land mapped as non-agricultural land comprises a mixture of hard standing and trees.

6. SOIL RESOURCES

The soil resources within the proposed site have been calculated from the median thicknesses of each horizon and the area of that horizon within the survey area. The areas have been estimated from the number of auger borings of each soil type (Table 2).

6.1 Topsoil

TS1

The mineral topsoil of Soil Types 1 and 2 (all Variants) may be stripped and stored together as a single unit at median thicknesses of:

Soil Type 1 Variant i = 36 cm

Soil Type 1 Variant ii = 38 cm

Soil Type 2 Variant i = 33 cm

Soil Type 2 Variant ii = 39 cm

TS2

The organically enriched mineral topsoil of Soil Types 3 and 5, both variants, may be stripped and stored together as a single unit at median thicknesses of:

Soil Type 3 = 31 cm

Soil Type 5 Variant i = 35 cm

Soil Type 5 Variant ii = 35 cm

TS3

The peaty topsoil of Soil Types 4, all variants, and 6 may be stripped and stored together as a single unit at median thicknesses of:

Soil Type 4 Variant i = 37 cm

Soil Type 4 Variant ii = 35 cm

Soil Type 4 Variant iii = 37 cm

Soil Type 6 = 36 cm

6.2 Subsoil

SS1

The predominantly medium sand textured subsoils within Soil Types 1, 4 and 5 may be stripped and stored together as a single unit at median thicknesses of:

Soil Type 1 Variant i = 84 cm

Soil Type 1 Variant ii = 24 cm

Soil Type 4 Variant i = 83 cm

Soil Type 4 Variant ii = 28 cm

Soil Type 4 Variant iii = 83 cm

Soil Type 5 Variant i = 85 cm

Soil Type 5 Variant ii = 35 cm

SS2

The clay textured lower subsoils of Variant ii of Soil Types 1, 4 and 5 together with all the subsoils of Soil Types 2 and 3 may be stripped and stored together as a single unit at median thicknesses of :

Soil Type 1 Variant ii = 58 cm

Soil Type 2 Variant i = 87 cm

Soil Type 2 Variant ii = 31 cm

Soil Type 3 = 89 cm

Soil Type 4 Variant ii = 57 cm

Soil Type 5 Variant ii = 50 cm

SS3

The peat of Soil Type 6 from below the topsoil may be stripped as a single unit at a medium thickness of 84 cm.

Table 2: Soil Resources					
Material Type	Source	Predominant Texture	Thickness (cm)	Area (ha)	Volume (m³)
Topsoil TS1	Soil Type 1 Soil Type 2	Medium sandy loam	Soil Type 1 Variant i = 36 Variant ii = 38	Soil Type 1 Variant i = 49 Variant ii = 27	Soil Type 1 Variant i = 176400 Variant ii = 102600
			Soil Type 2 Variant i = 33 Variant ii = 39	Soil Type 2 Variant i = 37 Variant ii = 6	Soil Type 2 Variant i = 122100 Variant ii = 23400
Topsoil TS2	Soil Type 3 Soil Type 5	Organic loam	Soil Type 3 = 31	Soil Type 3 = 16	Soil Type 3 = 49600
			Soil Type 5 Variant i = 35 Variant ii = 35	Soil Type 5 Variant i = 54 Variant ii = 34	Soil Type 5 Variant i = 189000 Variant ii = 119000
Topsoil TS3	Soil Type 4 Soil Type 6	Peat	Soil Type 4 Variant i = 37 Variant ii = 35 Variant iii = 37	Soil Type 4 Variant i = 37 Variant ii = 13 Variant iii = 18	Soil Type 4 Variant i = 136900 Variant ii = 45500 Variant iii = 66600
			Soil Type 6 = 36	Soil Type 6 = 44	Soil Type 6 = 158400
Subsoil SS1	Soil Type 1 Soil Type 4 Soil Type 5	Medium sand	Soil Type 1 Variant i = 84 Variant ii = 24	Soil Type 1 Variant i = 49 Variant ii = 27	Soil Type 1 Variant i = 411600 Variant ii = 64800
			Soil Type 4 Variant i = 83 Variant ii = 28 Variant iii = 83	Soil Type 4 Variant i = 37 Variant ii = 13 Variant iii = 18	Soil Type 4 Variant i = 307100 Variant ii = 36400 Variant iii = 149400
			Soil Type 5 Variant i = 85 Variant ii = 35	Soil Type 5 Variant i = 54 Variant ii = 34	Soil Type 5 Variant i = 459000 Variant ii = 119000
Subsoil SS2	Soil Type 1 Soil Type 2 Soil Type 3 Soil Type 4 Soil Type 5	Clay	Soil Type 1 Variant ii = 58	Soil Type 1 Variant ii = 27	Soil Type 1 Variant ii = 156600
			Soil Type 2 Variant i = 87 Variant ii = 31	Soil Type 2 Variant i = 37 Variant ii = 6	Soil Type 2 Variant i = 321900 Variant ii = 18600
			Soil Type 3 = 89	Soil Type 3 = 16	Soil Type 3 = 142400
			Soil Type 4 Variant ii = 57	Soil Type 4 Variant ii = 13	Soil Type 4 Variant ii = 74100
			Soil Type 5 Variant ii = 50	Soil Type 5 Variant ii = 34	Soil Type 5 Variant ii = 170000
Subsoil SS3	Soil Type 6	Peat	Soil Type 6 = 84	44	369600

7. **REFERENCES**

Meteorological Office (1989)

Climatological Data for Agricultural Land Classification. Meteorological Office:
Bracknell.

Ministry of Agriculture, Fisheries and Food (1972)

Agricultural Land Classification Map (Provisional). Sheet 124. 1 : 63 360 Scale.
MAFF: 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.

Soil Survey of England and Wales (1983)

Sheet 4, Soils of Eastern England. 1 : 250 000 Scale. SSEW: Harpenden.

APPENDIX I

Field Data: Hand Auger Borings

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
1	0 - 30	P (H10)	10YR2/1	-	1	Grade 2 Drought
	30 - 120	MS	7.5YR5/2	-	3	
2	0 - 36	MSL	10YR3/2	-	2	Subgrade 3a Drought
	36 - 58	MSL	10YR4/2	-	2	
	58 - 120	MS	10YR6/4	-	5	
3	0 - 28	LMS	10YR4/2	-	5	Subgrade 3b Drought
	28 - 120	MS	10YR5/6	-	20	
4	0 - 30	P (H10)	10YR2/1	-	Stoneless	Grade 1
	30 - 120	P (H8)	7.5YR2/1	-	Stoneless	
5	0 - 35	P (H10)	10YR2/1	-	Stoneless	Grade 1
	35 - 120	P (H8)	7.5YR2/1	-	Stoneless	
6	0 - 35	P (H10)	10YR2/1	-	Stoneless	Grade 1
	35 - 120	P (H8)	7.5YR2/1	-	Stoneless	
7	0 - 33	P (H10)	10YR2/1	-	Stoneless	Grade 1
	33 - 120	P (H8)	7.5YR2/1	-	Stoneless	
8	0 - 30	P (H10)	10YR2/1	-	Stoneless	Grade 1
	30 - 120	P (H10)	7.5YR2/1	-	Stoneless	
9	0 - 55	P (H10)	7.5YR2/2	-	Stoneless	Grade 1
	55 - 120	P (H8)	7.5YR2/2	-	Stoneless	
10	0 - 41	LP	10YR2/1	-	5	Grade 1
	41 - 120	MS	10YR5/4	-	20	
11	0 - 28	P (H10)	10YR2/1	-	1	Grade 2 Drought
	28 - 55	LMS	10YR5/4	-	5	
	55 - 120	MS	10YR6/4	-	15	
12	0 - 55	P (H10)	10YR2/1	-	Stoneless	Grade 1
	55 - 120	MS	10YR6/2	-	2	
13	0 - 34	P (H10)	10YR2/1	-	1	Grade 1
	34 - 48	C	10YR5/2	CDOM	2	
	48 - 65	P (H10)	10YR2/1	-	2	
	65 - 100	C	10YR5/3, 5/6	MPOM	5	
	100 - 120	MS	10YR5/6	-	10	
14	0 - 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 120	P (H8)	7.5YR2/1	-	Stoneless	
15	0 - 30	Org LMS	10YR4/2	-	3	Subgrade 3a Drought
	30 - 120	MS + clay lenses from 70 cm	10YR5/4	-	15	
16	0 - 34	Org LMS	10YR4/2	-	3	Subgrade 3a Drought
	34 - 120	MS + clay lenses	10YR5/4	-	10	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
17	0 - 30	Org MSL	10YR2/1	-	3	Grade 2 Drought Wetness Class III Grade 2
	30 - 60	C	10YR5/1	CDOM	5	
	60 - 120	MS	10YR5/4	-	25	
18	0 - 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 120	P (H8)	7.5YR3/2	-	Stoneless	
19	0 - 37	P (H10)	10YR2/1	-	1	Grade 1
	37 - 65	SCL	10YR5/4	CDOM	3	
	65 - 120	C(S)	10YR6/3	MPOM	2	
20	0 - 28	PL	10YR2/2	-	1	Subgrade 3a Drought
	28 - 88	MS	10YR6/4	-	5	
	88 - 120	SZL	10YR4/3	-	Stoneless	
21	0 - 38	P (H10)	10YR2/1	-	1	Grade 1
	38 - 52	P (H10)	7.5YR2/2	-	Stoneless	
	52 - 120	SZL	10YR6/2	-	Stoneless	
22	0 - 42	MSL	10YR2/2	-	2	Grade 1
	42 - 70	P (H10)	10YR2/1	-	Stoneless	
	70 - 120	MS	10YR6/4	-	5	
23	0 - 37	P (H10)	10YR2/1	-	2	Grade 1
	37 - 55	MS	10YR6/3	-	5	
	55 - 90	C	10YR5/3	VMPOM	5	
	90+ Impenetrable					
24	0 - 31	Org MSL	10YR2/1	-	Stoneless	Grade 2 Drought
	31 - 120	MS	10YR6/4	-	3	
25	0 - 55	P (H10)	10YR2/1	-	2	Grade 1
	55 - 100	MS	10YR6/3	-	2	
	100 - 120	C	10YR5/2	-	2	
26	0 - 40	P (H10)	10YR2/1	-	Stoneless	Grade 1
	40 - 120	P (H8)	7.5YR2/1	-	Stoneless	
27	0 - 40	Org MSL	10YR2/1	-	2	Grade 1
	40 - 68	P (H10)	7.5YR2/1	-	Stoneless	
	68 - 120	SZL	10YR5/2	-	Stoneless	
28	0 - 25	Org MSL	10YR2/1	-	2	Grade 1
	25 - 40	P (H10)	10YR2/1	-	Stoneless	
	40 - 120	MS	10YR5/4	CDOM	5	
29	0 - 40	P (H10)	10YR2/1	-	Stoneless	Grade 1
	40 - 120	P (H8)	7.5YR2/1	-	Stoneless	
30	0 - 40	P (H10)	10YR2/1	-	2	Wetness Class III Grade 2
	40 - 60	C	10YR5/2, 5/3	VMPOM	15	
	60 - 120	MS	10YR5/4	CDOM	35	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
31	0 – 30	Org MSL	10YR2/1	-	5	Subgrade 3a Drought
	30 - 70	MS	10YR5/4	-	25	
	70+ Impenetrable					
32	0 – 38	Org MSL	10YR2/2	-	5	Grade 2 Drought
	38 - 120	MS few C inclusions	10YR5/4	-	2	
33	0 – 28	PL	10YR2/2	-	5	Subgrade 3a Drought
	28 - 120	MS	10YR5/6	-	25	
34	0 – 30	MSL	10YR3/2	-	8	Subgrade 3a Drought
	30 - 60	C	10YR5/6, 5/3	MDOM	10	
	60 - 120	SC	10YR5/6	MDOM	10	
35	0 – 31	P (H10)	10YR2/1	-	Stoneless	Grade 1
	31 - 120	P (H10) Few S inclusions from 65 cm	7.5YR2/1	-	Stoneless	
36	0 – 40	P (H10)	10YR2/1	-	1	Grade 1
	40 - 120	P (H10)	7.5YR2/2	-	Stoneless	
37	0 – 38	MSL	10YR3/2	-	2	Subgrade 3a Drought
	38 - 65	LMS	10YR6/3	CDOM	5	
	65 - 90	MS	10YR6/3	CDOM	5	
	90 - 120	C	10YR5/3, 5/6	MDOM	5	
38	0 – 80	P (H10)	10YR2/1	-	Stoneless	Grade 1
	80 - 120	P (H8)	10YR2/1	-	Stoneless	
39	0 – 54	P (H10)	10YR2/1	-	Stoneless	Grade 1
	54 - 120	P (H8)	10YR2/1	-	Stoneless	
40	0 – 32	P (H10)	10YR2/1	-	Stoneless	Grade 1
	32 - 120	P (H8)	7.5YR2/1	-	Stoneless	
41	0 – 37	P (H10)	10YR2/1	-	Stoneless	Grade 1
	37 - 67	P (H8)	7.5YR2/1	-	Stoneless	
	67 - 120	SCL	10YR5/2	-	Stoneless	
42	0 – 40	Org LMS	10YR4/1	-	5	Grade 2 Drought
	40 - 80	MS	10YR5/4	-	20	
	80+ Impenetrable					
43	0 – 30	Org LMS	10YR2/1	-	5	Subgrade 3a Drought
	30 - 70	MS	10YR5/4	-	35	
	70+ Impenetrable					

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
44	0 – 35	Org MSL	10YR2/1	-	5	Grade 2 Drought
	35 - 70	MS	10YR5/6	-	25	
	70 - 120	SC	10YR5/6	MDOM	5	
45	0 – 36	Org LMS	10YR2/1	-	5	Grade 2 Drought
	36 - 80	MS	10YR5/4	-	25	
	80+ Impenetrable					
46	0 – 33	Org MSL	10YR2/1	-	5	Grade 2 Drought
	33 - 78	MS	10YR5/6	-	15	
	78 - 120	SC	10YR5/3, 5/6	MDOM	5	
47	0 – 27	Org MSL	10YR2/1	-	4	Subgrade 3a Drought
	27 - 120	MS	10YR6/4	-	8	
48	0 – 32	Org MSL	10YR3/2	-	7	Grade 2 Drought
	32 - 60	LMS	10YR5/6	-	10	
	60 - 83	MS	10YR6/4	CDOM	15	
	83 - 120	C(s)	10YR5/6, 5/3	MPOM	5	
49	0 – 35	Org MSL	10YR2/2	-	10	Subgrade 3a Drought
	35 - 120	MS	10YR6/4	-	35	
50	0 – 42	MSL	10YR3/2	-	6	Subgrade 3b Drought
	42 - 120	MS	10YR6/4	CDOM	15	
51	0 – 38	MSL	10YR3/2	-	10	Subgrade 3b Drought
	38 - 120	MS	10YR6/4	CDOM	25	
52	0 – 39	SCL	10YR3/2	-	7	Subgrade 3b Drought
	39 - 120	MS	10YR6/4	CDOM	20	
53	0 – 30	PL	10YR3/2	-	2	Grade 1
	30 - 120	P (H10), (H7) from 80 cm	10YR2/2	-	Stoneless	
54	0 – 30	P (H10)	10YR2/1	-	Stoneless	Grade 1
	30 - 41	P (H10)	10YR2/2	-	Stoneless	
	41 - 120	MS few clay lenses	10YR5/2	CDOM	5	
55	0 – 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 120	P (H10)	10YR2/2	-	Stoneless	
56	0 – 30	P (H10)	10YR2/1	-	Stoneless	Grade 1
	30 - 120	P (H10)	10YR3/2	-	Stoneless	
57	0 – 34	P (H10)	10YR2/1	-	Stoneless	Grade 1
	34 - 66	P (H10)	7.5YR2/1	-	Stoneless	
	66 - 120	ZL	10YR7/2	-	Stoneless	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
58	0 – 37	P (H10)	10YR2/1	-	Stoneless	Grade 1
	37 - 120	P (H8)	7.5YR2/1	-	Stoneless	
59	0 – 35	P (H10)	10YR2/1	-	Stoneless	Grade 1
	35 - 120	P (H8)	7.5YR2/1	-	Stoneless	
60	0 – 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 120	P (H10)	7.5YR2/1	-	Stoneless	
61	0 – 38	PL	10YR2/1	-	5	Grade 2 Drought
	38 - 120	MS	10YR5/6	-	10	
62	0 – 40	PL	10YR2/1	-	5	Grade 2 Drought
	40 - 68	LMS	10YR4/3	-	10	
	68 - 120	MS	10YR5/4	-	10	
63	0 – 40	Org MSL	10YR2/1	-	3	Grade 1
	40 - 75	MS	10YR5/6	-	5	
	75 - 120	SC	10YR5/3, 5/6	MDOM	3	
64	0 – 35	Org MSL	10YR2/1	-	5	Grade 2 Drought
	35 - 95	MS	10YR5/4	-	10	
	95 - 120	LMS	10YR5/6	CDOM	5	
65	0 – 37	Org MSL	10YR2/1	-	3	Grade 2 Drought
	37 - 68	MS	10YR5/4	-	5	
	68 - 120	C	10YR5/6, 5/3	MDOM	5	
66	0 – 30	Org MSL	10YR2/1	-	5	Grade 2 Drought
	30 - 60	MS	10YR5/4	-	15	
	60 - 120	SC	10YR5/6, 5/3	MDOM	5	
67	0 – 25	Org MSL	10YR2/1	-	3	Subgrade 3a Drought
	25 - 78	MS	10YR5/4	-	15	
	78 - 120	C	10YR5/3, 5/6	MPOM	5	
68	0 – 41	MSL	10YR3/2	-	8	Subgrade 3b Drought
	41 - 120	MS	10YR5/6	-	15	
69	0 – 40	MSL	10YR4/2	-	8	Subgrade 3b Drought
	40 - 120	MS	10YR6/3	-	30	
70	0 – 34	MSL	10YR3/2	-	5	Subgrade 3b Drought
	34 - 120	MS	10YR6/4	CDOM	25	
71	0 – 36	MSL	10YR3/2	-	5	Subgrade 3b Drought
	36 - 120	MS	10YR6/4	CDOM	25	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
72	0 – 38	MSL	10YR3/2	-	5	Grade 2/3a Drought Wetness Class III Grade 2
	38 - 120	C	2.5Y5/3	VMPOM	5	
73	0 – 37	Org MSL	10YR3/2	-	3	Grade 1
	37 - 69	P (H10)	10YR2/2	-	Stoneless	
	69 - 120	P (H7)	10YR2/2	-	Stoneless	
74	0 – 33	P (H10)	10YR2/1	-	Stoneless	Grade 1
	33 - 71	P (H10)	10YR3/3	-	Stoneless	
	71 - 120	MS	10YR5/2	-	5	
75	0 – 38	P (H10)	7.5YR2/1	-	Stoneless	Grade 1
	38 - 120	P (H8)	10YR2/2	-	Stoneless	
76	0 – 40	P (H10)	10YR2/1	-	Stoneless	Grade 1
	40 - 120	P (H10)	10YR3/2	-	Stoneless	
77	0 – 30	Org LMS	10YR2/1	-	4	Grade 1
	30 - 93	LP	10YR2/2	-	2	
	93 - 120	MS	10YR6/3	-	5	
78	0 – 34	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	34 - 120	MS	10YR5/4	-	2	
79	0 – 45	P (H10)	10YR2/1	-	Stoneless	Grade 1
	45 - 120	P (H9)	10YR2/1	-	Stoneless	
80	0 – 38	P (H10)	10YR2/1	-	1	Grade 1
	38 - 120	P (H10)	7.5YR2/1	-	Stoneless	
81	0 – 31	LP	10YR2/1	-	2	Grade 1
	31 - 85	MS	10YR6/4	-	2	
	85 - 120	C	10YR5/3	MDOM	2	
82	0 – 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 66	P (H10)	7.5YR2/1	-	Stoneless	
	66 - 90	C + S lenses	10YR5/2	CDOM	3	
	90 - 120	MS	10YR5/4	CDOM	15	
83	0 – 37	LP	10YR2/1	-	2	Grade 1
	37 - 68	MS	10YR5/4	-	5	
	68 - 120	MS	10YR6/4	-	20	
84	0 – 33	Org LMS	10YR2/1	-	5	Subgrade 3a Drought
	33 - 120	MS	10YR5/4	-	20	
85	0 – 40	P (H10)	10YR2/1	-	2	Grade 1
	40 - 65	P (H8)	7.5YR2/1	-	Stoneless	
	65 - 120	MS	10YR5/4	-	15	
86	0 – 35	Org LMS	10YR2/1	-	7	Subgrade 3a Drought
	35 - 72	MS	10YR6/4	-	10	
	72 - 120	LMS	10YR5/6	-	10	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
87	0 – 37	Org MSL	10YR2/1	-	3	Grade 2 Drought
	37 - 120	MS	10YR5/6	-	8	
88	0 – 32	Org MSL	10YR2/1	-	3	Grade 2 Drought
	32 - 45	MS	10YR5/6	-	5	
	45 - 90	LMS	10YR5/6	CDOM	5	
	90 - 120	C(S)	10YR5/3, 5/6	MPOM	3	
89	0 – 30	Org MSL	10YR2/1	-	3	Grade 2 Drought
	30 - 80	MS	10YR5/4	-	10	
	80 - 120	C(S)	10YR5/6, 5/3	MPOM	5	
90	0 – 38	Org MSL	10YR2/1	-	3	Grade 2 Drought
	38 - 73	MS	10YR5/4	-	10	
	73 - 120	C	10YR5/6, 5/3	MPOM	5	
91	0 – 30	Org MSL	10YR2/1	-	5	Grade 2/3a Drought
	30 - 70	MS	10YR5/4	-	8	
	70 - 120	LMS	10YR5/6	CDOM	5	
92	0 – 40	MSL	10YR4/2	-	5	Subgrade 3b Drought
	40 - 60	MS	10YR6/4	-	25	
	60+ Impenetrable					
93	0 – 40	MSL	10YR3/2	-	7	Subgrade 3b Drought
	40 - 120	MS	10YR6/4 becoming 5/6	-	10	
94	0 – 28	MSL	10YR3/2	-	8	Subgrade 3b Drought
	28 - 120	MS	10YR6/4	-	15	
95	0 – 32	MSL	10YR3/2	-	5	Subgrade 3b Drought
	32 - 120	MS	10YR6/4 becoming 5/6	-	15	
96	0 – 37	MSL	10YR3/2	-	7	Subgrade 3b Drought
	37 - 120	MS	10YR5/6	-	25	
97	0 – 35	MSL	10YR3/3	-	2	Grade 1
	35 - 120	P (H10), (H8) from 80 cm	10YR2/2	-	Stoneless	
98	0 – 35	P (H10)	10YR2/1	-	Stoneless	Grade 1
	35 - 120	P (H7)	10YR2/2	-	Stoneless	
99	0 – 35	PL	10YR3/2	-	Stoneless	Grade 1
	35 - 70	ZL	10YR5/2	CDOM	Stoneless	
	70 - 120	SZL	10YR5/2	CDOM	Stoneless	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
100	0 – 33	P (H10)	10YR2/1	-	Stoneless	Grade 1
	33 - 75	P (H10)	7.5YR2/2	-	Stoneless	
	75 - 120	P (H7)	10YR2/1	-	Stoneless	
101	0 – 35	P (H10)	10YR2/1	-	Stoneless	Grade 1
	35 - 85	P (H10)	7.5YR2/2	-	Stoneless	
	85 - 120	P (H8)	10YR2/2	-	Stoneless	
102	0 – 34	P (H10)	10YR2/1	-	Stoneless	Grade 1
	34 - 48	SCL	10YR5/2	CDOM	5	
	48 - 85	PS	10YR5/4, 2/1	-	5	
	85 - 120	P (H8)	10YR2/1	-	Stoneless	
103	0 – 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 100	P (H8)	10YR2/2	-	Stoneless	
	100 - 120	C	10YR5/1	CDOM	2	
104	0 – 35	P (H10)	10YR2/1	-	1	Grade 1
	35 - 80	P (H10)	7.5YR2/1	-	Stoneless	
	80 - 120	C	10YR5/2	CDOM	5	
105	0 – 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 80	P (H10)	7.5YR2/1	-	Stoneless	
	80 - 120	MS	10YR5/2	-	10	
106	0 – 37	LP	10YR2/1	-	2	Grade 1
	37 - 120	MS	10YR6/4	-	10	
107	0 – 37	PL	10YR2/1	-	2	Grade 2 Drought
	37 - 120	MS	10YR6/4	-	15	
108	0 – 33	Org LMS	10YR2/1	-	4	Subgrade 3a Drought
	33 - 120	MS	10YR6/4	-	10	
109	0 – 35	Org LMS	10YR2/1	-	7	Subgrade 3a Drought
	35 - 80	MS	10YR6/4	-	25	
	80+ Impenetrable					
110	0 – 37	Org LMS	10YR2/1	-	3	Grade 2 Drought
	37 - 120	MS	10YR6/4	-	10	
111	0 – 50	Org MSL	10YR2/1	-	3	Grade 1
	50 - 80	P (H10)	7.5YR2/1	-	2	
	80 - 120	MS	10YR5/4	-	5	
112	0 – 35	Org MSL	10YR2/1	-	3	Grade 1
	35 - 50	P (H10)	10YR2/1	-	2	
	50 - 100	LMS	10YR5/6, 5/3	CDOM	5	
	100 - 120	C(S)	10YR5/3, 5/6	MPOM	3	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
113	0 – 36	Org MSL	10YR2/1	-	3	Grade 2 Drought
	36 - 50	MS	10YR5/6	-	5	
	50 - 100	LMS	10YR5/6	CDOM	5	
	100 - 120	C(S)	10YR5/3, 5/6	MDOM	3	
114	0 – 29	Org MSL	10YR2/1	-	3	Grade 2 Drought
	29 - 58	MS	10YR5/6	-	5	
	58 - 120	C	10YR5/3, 5/6	VMPOM	3	
115	0 – 33	Org LMS	10YR2/1	-	3	Grade 2 Drought
	33 - 120	LMS	10YR5/6	CDOM	5	
116	0 – 40	Org LMS	10YR2/1	-	3	Grade 2 Drought
	40 - 120	LMS	10YR6/3	CDOM	10	
117	0 – 38	(Org)MSL	10YR2/2	-	6	Subgrade 3a Drought
	38 - 55	MS	10YR5/6	-	15	
	55 - 120	C	10YR5/6, 5/3	MPOM	5	
118	0 – 40	(Org)LMS	10YR2/2	-	7	Subgrade 3b Drought
	40 - 120	MS	10YR6/4	-	10	
119	0 – 38	MSL	10YR2/2	-	5	Subgrade 3a Drought
	38 - 58	MS	10YR5/6	-	5	
	58 - 120	C(S)	10YR5/6, 5/3	MDOM	5	
120	0 – 35	MSL	10YR3/2	-	5	Subgrade 3b Drought
	35 - 120	MS	10YR6/4	CDOM	15	
121	0 – 40	SCL	10YR3/2	-	5	Grade 2 Drought Wetness Class III Grade 2 Very calcareous
	40 - 120	C	2.5Y5/2	VMPOM	5	
122	0 – 35	Org LMS	10YR2/1	-	2	Grade 1
	35 - 58	P (H10)	10YR2/1	-	Stoneless	
	58 - 120	MS	10YR6/3	-	10	
123	0 – 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 70	P (H10)	7.5YR2/1	-	Stoneless	
	70 - 120	P (H8)	10YR2/2	-	Stoneless	
124	0 – 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 120	P (H10)	7.5YR2/2	-	Stoneless	
125	0 – 32	P (H10)	10YR2/1	-	Stoneless	Grade 1
	32 - 48	P (H10)	7.5YR2/2	-	Stoneless	
	48 - 120	MS	10YR6/3	-	10	
126	0 – 28	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	28 - 120	MS	10YR6/3	-	2	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
127	0 - 37	PL	10YR2/1	-	2	Grade 2 Drought
	37 - 50	MS	10YR5/2	-	5	
	50 - 80	MS	10YR6/3	-	20	
	80+ Impenetrable					
128	0 - 40	PL	10YR2/1	-	Stoneless	Grade 1
	40 - 70	P (H9)	10YR2/2	-	Stoneless	
	70 - 120	MS	10YR5/4	-	5	
129	0 - 37	P (H10)	10YR2/1	-	1	Grade 1
	37 - 80	P (H10)	7.5YR2/1	-	Stoneless	
130	0 - 42	P (H10)	10YR2/1	-	Stoneless	Grade 1
	42 - 100	P (H8)	10YR3/2	-	Stoneless	
	100 - 120	MS	10YR5/2	-	10	
131	0 - 35	P (H10)	10YR2/1	-	1	Grade 1
	35 - 105	P (H10)	10YR3/2	-	Stoneless	
	105 - 120	MS	10YR5/4	-	15	
132	0 - 34	P (H10)	7.5YR2/1	-	Stoneless	Grade 1
	34 - 120	MS	10YR6/3	-	5	
133	0 - 30	P (H10)	10YR2/1	-	2	Grade 2 Drought
	30 - 70	MS	10YR6/3	-	5	
	70 - 120	MS	10YR6/4	-	10	
134	0 - 35	LP	10YR2/1	-	2	Grade 1
	35 - 120	MS	10YR5/4	-	15	
135	0 - 35	Org MSL	10YR2/2	-	3	Grade 2 Drought
	35 - 120	MS	10YR6/4	-	15	
136	0 - 47	Org MSL	10YR2/1	-	3	Grade 1
	47 - 120	MS	10YR5/4	-	10	
137	0 - 30	Org MSL	10YR2/1	-	3	Grade 2 Drought
	30 - 120	MS	10YR5/6	-	10	
138	0 - 35	Org MSL	10YR2/1	-	3	Grade 2 Drought
	35 - 120	MS	10YR6/4	-	10	
139	0 - 39	Org MSL	10YR2/1	-	3	Grade 1
	39 - 120	MS + few C inclusions	10YR5/6	-	5	
140	0 - 32	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	32 - 60	MS	10YR6/3 becoming 5/6	-	5	
	60 - 120	SC	10YR5/6	C DOM	3	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
141	0 – 36	Org MSL	10YR2/1	-	3	Grade 1
	36 - 50	LMS	10YR5/6	-	3	
	50 - 120	C(S)	10YR5/6, 5/3	MPOM	3	
142	0 – 40	MSL	10YR3/2	-	5	Subgrade 3a Drought
	40 - 71	LMS	10YR5/6	-	10	
	71 - 120	C(S)	10YR5/6, 5/3	MPOM	5	
143	0 – 38	MSL	10YR3/2	-	6	Subgrade 3a Drought
	38 - 46	MS	10YR5/6	-	10	
	46 - 120	C(S)	10YR5/6, 5/3	MPOM	5	
144	0 – 42	SCL	10YR4/2	-	4	Grade 2 Drought
	42 - 100	SCL	10YR5/3	CDOM	4	
	100 - 120	C(S)	10YR5/3, 5/6	MDOM	4	
145	0 – 41	SCL	10YR4/2	-	5	Subgrade 3a Drought
	41 - 55	MS	10YR6/3	CDOM	10	
	55 - 120	C	2.5Y5/3	VMPOM	5	
146	0 – 34	P (H10)	10YR2/1	-	2	Grade 1
	34 - 60	LMS	10YR4/2	-	5	
	60 - 120	MS	10YR6/4	-	15	
147	0 – 35	Org LMS	10YR2/1	-	4	Subgrade 3a Drought
	35 - 120	MS	10YR6/3	-	5	
148	0 – 33	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	33 - 58	MS	10YR6/3	-	5	
	58 - 90	MS	10YR5/4	-	25	
	90+ Impenetrable					
149	0 – 35	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	35 - 57	MS	10YR6/3	-	2	
	57 - 120	MS	10YR5/4	-	2	
150	0 – 31	P (H10)	10YR2/1	-	Stoneless	Grade 1
	31 - 88	P (H10)	7.5YR3/3	-	Stoneless	
	88 - 120	MS + C lenses	10YR5/4	CDOM	10	
151	0 – 34	P (H10)	10YR3/2	-	2	Grade 2 Drought
	34 - 120	MS	10YR6/3	-	5	
152	0 – 45	P (H10)	10YR2/1	-	2	Grade 1
	45 - 120	MS	10YR6/3	-	10	
153	0 – 35	Org LMS	10YR2/1	-	5	Grade 2 Drought
	35 - 120	MS	10YR6/3	-	3	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
154	0 - 35	LP	10YR2/1	-	Stoneless	Grade 1
	35 - 120	SZL	7.5YR5/2	-	Stoneless	
155	0 - 27	LP	10YR2/1	-	5	Grade 1
	27 - 120	P (H10)	7.5YR2/1	-	Stoneless	
156	0 - 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 69	P (H8)	7.5YR2/1	-	Stoneless	
	69 - 120	MS	10YR6/3	-	10	
157	0 - 32	P (H10)	10YR2/1	-	2	Grade 2 Drought
	32 - 120	MS	10YR6/3	-	5	
158	0 - 42	(Org)MSL	10YR2/2	-	5	Subgrade 3a/3b Drought
	42 - 120	MS	10YR6/3	-	15	
159	0 - 45	MSL	10YR3/1	-	5	Subgrade 3a Drought
	45 - 120	MS	10YR5/4	-	15	
160	0 - 42	MSL	10YR3/1	-	5	Subgrade 3a/3b Drought
	42 - 120	MS	10YR5/4	CDOM	15	
161	0 - 30	PL	10YR2/1	-	3	Subgrade 3a Drought
	30 - 72	MS	10YR6/4	-	5	
	72 - 120	C	10YR5/6	CDOM	3	
162	0 - 32	PL	10YR2/1	-	3	Grade 2 Drought
	32 - 55	MS	10YR5/4	-	5	
	55 - 120	C	10YR5/6, 5/3	VMPOM	3	
163	0 - 34	Org MSL	10YR2/1	-	3	Grade 2 Drought
	34 - 61	MS	10YR5/4	-	5	
	61 - 120	C	10YR5/6, 5/3	VMPOM	3	
164	0 - 38	Org MSL	10YR2/1	-	3	Grade 1
	38 - 85	LMS	10YR5/6	CDOM	5	
	85 - 120	C	10YR5/3, 5/6	VMPOM	3	
165	0 - 30	Org MSL	10YR2/1	-	3	Grade 1
	30 - 55	SC	10YR5/6	CDOM	5	
	55 - 120	C(S)	10YR5/6, 5/3	MPOM	3	
166	0 - 42	MSL	10YR3/2	-	6	Subgrade 3b Drought
	42 - 120	MS	10YR5/6	CDOM	20	
167	0 - 39	MSL	10YR3/2	-	7	Subgrade 3b Drought
	39 - 55	LMS	10YR5/6	-	10	
	55 - 120	MS	10YR5/6	-	15	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
168	0 – 39	SCL	10YR4/2	-	7	Subgrade 3b Drought
	39 - 70	MS	10YR5/6	-	10	
	70 - 120	C	10YR5/3, 5/6	MPOM	5	
169	0 – 36	P (H10)	10YR2/1	-	2	Grade 1
	36 - 100	MS	10YR6/3	-	15	
	100 - 120	C	2.5Y5/2	CDOM	5	
170	0 – 35	P (H10)	10YR2/1	-	2	Grade 2 Drought
	35 - 120	MS	10YR5/4	-	15	
171	0 – 32	LMS	10YR3/3	-	5	Subgrade 3b Drought
	32 - 85	MS	10YR5/4	-	25	
	85+ Impenetrable					
172	Non-agricultural					
173	0 – 37	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	37 - 120	MS	10YR6/3	-	5	
174	0 – 32	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	32 - 60	MS	10YR6/3	-	3	
	60 - 120	MS	10YR5/4	-	15	
175	0 – 32	P (H10)	10YR2/1	-	Stoneless	Grade 1
	32 - 60	P (H10)	7.5YR2/1	-	Stoneless	
	60 - 75	ZL	10YR4/2	CDOM	3	
	75 - 120	MS + C lenses	10YR5/6	CDOM	15	
176	0 – 37	P (H10)	7.5YR2/1	-	Stoneless	Grade 1
	37 - 70	P (H10)	10YR3/3	-	Stoneless	
	70 - 95	C	10YR5/6, 5/3	MPOM	10	
	95 - 120	MS	10YR5/2	-	15	
177	0 – 29	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	29 - 120	MS	10YR6/3	-	5	
178	0 – 28	h LMS	10YR2/1	-	5	Subgrade 3b Drought
	28 - 120	MS	10YR6/2	-	3	
179	0 – 30	Org MSL	10YR2/2	-	5	Subgrade 3a Drought
	30 - 54	LMS	10YR5/4	-	5	
	54 - 120	MS	10YR6/4	-	10	
180	0 – 40	P (H10)	10YR2/1	-	Stoneless	Grade 1
	40 - 80	P (H10)	7.5YR2/1	-	Stoneless	
	80 - 120	P (H8)	10YR4/4	-	Stoneless	
181	0 – 38	P (H10)	10YR2/1	-	Stoneless	Grade 1
	38 - 120	P (H10)	7.5YR2/1	-	Stoneless	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
182	0 - 37	P (H10)	10YR2/1	-	Stoneless	Grade 1
	37 - 44	P (H10)	7.5YR2/1	-	Stoneless	
	44 - 120	MS	10YR6/3	CDOM	5	
183	0 - 38	Org LMS	10YR2/1	-	5	Grade 2 Drought
	38 - 63	MS	10YR5/6	-	5	
	63 - 120	SC	10YR5/6, 5/3	CDOM	5	
184	0 - 34	Org MSL	10YR2/1	-	3	Grade 2 Drought
	34 - 85	MS	10YR5/4	-	5	
	85 - 120	SC	10YR5/6, 5/3	CDOM	5	
185	0 - 40	MSL	10YR2/2	-	5	Subgrade 3b Drought
	40 - 120	MS	10YR6/3	CDOM	10	
186	0 - 32	PL	10YR2/1	-	3	Grade 2 Drought
	32 - 58	MS	10YR5/4	-	5	
	58 - 120	C(S)	10YR5/6, 5/3	VMPOM	3	
187	0 - 34	Org MSL	10YR2/1	-	3	Grade 1
	34 - 48	MS	10YR5/6	-	5	
	48 - 120	C	10YR5/3, 5/6	VMPOM	3	
188	0 - 30	Org MSL	10YR2/1	-	3	Grade 2 Drought
	30 - 58	MS	10YR5/6	-	5	
	58 - 70	SC	10YR5/6	CDOM	3	
	70 - 120	C	10YR5/3, 5/6	VMPOM	3	
189	0 - 30	Org MSL	10YR2/1	-	3	Grade 1
	30 - 58	LMS	10YR5/6	-	5	
	58 - 70	SC	10YR5/6, 5/3	CDOM	5	
	70 - 120	C	10YR5/3, 5/6	VMPOM	3	
190	0 - 35	Org MSL	10YR2/1	-	3	Grade 1
	35 - 55	MS	10YR5/4	-	5	
	55 - 120	C(S)	10YR5/6, 5/3	MPOM	3	
191	0 - 40	SCL	10YR4/3	-	5	Subgrade 3b Drought
	40 - 82	MS	10YR5/6	CDOM	10	
	82 - 120	C	10YR5/6, 5/3	MPOM	5	
192	0 - 41	MSL	10YR3/2	-	5	Subgrade 3a Drought
	41 - 55	MS	10YR5/4	CDOM	10	
	55 - 120	C	10YR5/3, 5/6	MPOM	5	
193	0 - 45	Org MSL	10YR2/1	-	3	Grade 1
	45 - 55	P (H10)	10YR2/1	-	Stoneless	
	55 - 76	LMS	10YR5/4	CDOM	5	
	76 - 120	C	2.5Y5/2	MDOM	5	
194	0 - 39	PL	10YR2/2	-	2	Grade 1
	39 - 52	P (H10)	10YR2/1	-	Stoneless	
	52 - 120	MS	10YR5/4	-	15	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
195	0 - 40	SCL	10YR2/2	-	5	Grade 1
	40 - 95	P (H10) + clay lenses	10YR2/1	-	Stoneless	
	95 - 120	MS	10YR5/4	-	25	
196	0 - 42	(Org) C	10YR2/2	-	3	Grade 1
	42 - 68	P (H10)	10YR2/1	-	Stoneless	
	68 - 120	MS	10YR6/4	-	15	
197	0 - 38	LMS	10YR3/3	-	4	Subgrade 3b Drought
	38 - 120	MS	10YR6/3	-	3	
198	0 - 34	PL	7.5YR3/3	-	2	Grade 2 Drought
	34 - 120	MS	10YR6/3	-	2	
199	0 - 37	PL	7.5YR3/3	-	2	Grade 2 Drought
	37 - 120	MS	10YR6/4	-	2	
200	0 - 31	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	31 - 69	MS	10YR6/3	-	3	
	69 - 120	MS	10YR5/4	-	5	
201	0 - 31	PL	10YR2/1	-	1	Grade 2/3a Drought
	31 - 120	MS	10YR6/3	-	3	
202	0 - 38	P (H10)	10YR2/1	-	1	Grade 1
	38 - 55	P (H8)	10YR2/1	-	Stoneless	
	55 - 70	ZL	10YR4/2	CPOM	5	
	70 - 120	MS + C lenses	10YR6/3	CDOM	15	
203	0 - 37	P (H10)	7.5YR2/1	-	1	Grade 1
	37 - 46	P (H8)	7.5YR2/2	-	Stoneless	
	46 - 75	SC	10YR5/6	CDOM	15	
	75 - 120	MS	10YR5/6	-	20	
204	0 - 28	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	28 - 120	MS	10YR6/3 becoming 5/4	-	2	
205	0 - 38	P (H10)	7.5YR2/1	-	2	Grade 1
	38 - 64	MS	10YR6/3	-	2	
	64 - 120	MS	10YR5/4	-	25	
206	0 - 38	P (H10)	10YR2/1	-	2	Grade 1
	38 - 50	P (H10)	7.5YR2/1	-	Stoneless	
	50 - 68	LMS	10YR5/6	-	5	
	68 - 120	MS	10YR5/4	-	5	
207	0 - 38	P (H10)	10YR2/1	-	2	Grade 1
	38 - 72	P (H10)	7.5YR2/2	-	Stoneless	
	72 - 120	P (H4)	10YR4/4	-	Stoneless	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
208	0 - 40	P (H10)	10YR2/1	-	2	Grade 1
	40 - 50	P (H10)	7.5YR2/1	-	Stoneless	
	50 - 70	P (H9)	10YR4/4	-	3	
	70 - 120	MS	10YR6/4	-	10	
209	0 - 40	PL	10YR2/1	-	2	Grade 1
	40 - 70	MS	10YR6/2	-	2	
	70 - 80	P (H10)	10YR2/1	-	Stoneless	
	80 - 120	MS	10YR5/4	-	2	
210	0 - 33	Org MSL	10YR2/2	-	2	Grade 2 Wetness Class III
	33 - 120	C + few S lenses	10YR5/6, 5/3	VMPOM	2	
211	0 - 38	SCL	10YR4/3	-	3	Grade 2 Drought
	38 - 48	SC	10YR5/6	CDOM	5	
	48 - 120	MCL	10YR4/2	-	5	
212	0 - 38	Org SCL	10YR2/1	-	3	Grade 2 Drought
	38 - 120	MS	10YR5/4 becoming 5/6	-	5	
213	0 - 55	LMS	10YR3/3	-	2	Subgrade 3b Drought
	55 - 80	LMS	10YR4/4	-	2	
	80 - 120	MS	10YR6/3	-	2	
214	0 - 28	Org MSL	10YR2/1	-	2	Subgrade 3a Drought
	28 - 120	MS	10YR5/4	-	5	
215	0 - 37	PL	10YR3/2	-	2	Grade 2 Drought
	37 - 120	MS	10YR5/4	-	5	
216	0 - 33	P (H10)	10YR2/1	-	Stoneless	Grade 1
	33 - 52	P (H10) + C	10YR4/4	MPOM	Stoneless	
	52 - 120	MS	10YR6/3	-	5	
217	0 - 35	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	35 - 120	MS	10YR5/2	-	5	
218	0 - 28	PL	10YR2/2	-	3	Grade 2 Drought Wetness Class III Grade 2
	28 - 55	C	10YR5/6, 5/3	MPOM	3	
	55 - 120	MS	10YR5/2	-	5	
219	0 - 30	Org LMS	10YR2/2	-	5	Subgrade 3a Drought
	30 - 50	MS	10YR6/4	-	10	
	50 - 120	MS	10YR4/3	-	10	
220	0 - 34	h LMS	7.5YR3/2	-	4	Subgrade 3b Drought
	34 - 48	MS	10YR6/4	-	5	
	48 - 120	MS	10YR5/4	-	5	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
221	0 – 36	LP	10YR2/1	-	3	Grade 1
	36 - 120	MS	10YR5/6	-	5	
222	0 – 32	LP	10YR2/1	-	Stoneless	Grade 1
	32 - 120	P (H10)	7.5YR2/2	-	Stoneless	
223	0 – 40	P (H10)	10YR2/1	-	Stoneless	Grade 1
	40 - 70	P (H10)	7.5YR2/2	-	Stoneless	
	70 - 120	MS	10YR5/2	-	5	
224	0 – 33	P (H10)	10YR2/1	-	2	Grade 1
	33 - 65	P (H10)	7.5YR2/2	-	Stoneless	
	65 - 120	MS	10YR5/3	-	5	
225	0 – 37	P (H10)	10YR2/1	-	Stoneless	Grade 1
	37 - 60	P (H10)	7.5YR2/1	-	Stoneless	
	60 - 120	MS	10YR5/6	-	15	
226	0 – 34	P (H10)	10YR2/1	-	2	Grade 2 Wetness Class III
	34 - 55	MS	10YR5/6	CDOM	5	
	55 - 120	C	10YR5/3, 5/6	CDOM	5	
227	0 – 34	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	34 - 120	MS	10YR5/4	-	10	
228	0 – 35	LMS	10YR3/3	-	5	Subgrade 3b Drought
	35 - 120	MS	10YR4/6	-	10	
229	0 – 37	P (H10)	10YR3/2	-	Stoneless	Grade 1
	37 - 65	ZL	7.5YR4/6	MDOM	Stoneless	
	65 - 120	MS	10YR5/4	CDOM	10	
230	0 – 32	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	32 - 120	MS	10YR5/2	-	5	
231	0 – 30	Org LMS	10YR2/1	-	3	Subgrade 3a Drought
	30 - 120	MS	10YR6/3	-	2	
232	0 – 34	PL	10YR2/1	-	3	Grade 2 Drought
	34 - 100	MS	10YR5/6	CDOM	3	
	100 - 120	SC	10YR5/6	MPOM	3	
233	0 – 36	PL	10YR2/1	-	2	Grade 2 Drought
	36 - 120	MS	10YR5/2 becoming 5/6	CDOM	2	
234	0 – 40	P (H10)	10YR2/1	-	2	Grade 1
	40 - 63	P (H10)	7.5YR2/1	-	Stoneless	
	63 - 120	P (H4) common wood fragments	7.5YR2/3	-	Stoneless	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
235	0 – 36	P (H10)	10YR2/1	-	Stoneless	Grade 1
	36 - 120	P (H8)	7.5YR2/1	-	Stoneless	
236	0 – 37	P (H10)	10YR2/1	-	Stoneless	Grade 1
	37 - 120	SZL	10YR5/2	CDOM	Stoneless	
237	0 – 33	LMS	10YR3/2	-	3	Subgrade 3b Drought
	33 - 120	MS	10YR6/4	-	5	
238	0 – 45	LMS	10YR3/2	-	4	Subgrade 3b Drought
	45 - 120	MS	10YR6/4	-	5	
239	0 – 36	MSL	10YR3/3	-	2	Subgrade 3a Drought
	36 - 62	SCL	10YR4/4, 5/6	MDOM	10	
	62 - 120	MS	10YR5/3, 5/6	MPOM	10	
240	0 – 43	LMS	10YR3/2	-	2	Subgrade 3b Drought
	43 - 120	MS	10YR6/2	-	5	
241	0 – 37	Org LMS	10YR2/2	-	2	Subgrade 3a Drought
	37 - 120	MS	10YR6/3	-	5	
242	0 – 37	Org LMS	10YR2/1	-	2	Subgrade 3a Drought
	37 - 120	MS	10YR5/6 becoming 6/3	-	5	
243	0 – 30	Org MSL	10YR2/1	-	3	Grade 2 Drought
	30 - 85	MS	10YR5/4	-	2	
	85 - 100	MS	10YR5/6	-	2	
	100 - 120	SC	10YR5/6	CDOM	5	
244	0 – 35	Org LMS	10YR2/1	-	5	Subgrade 3a Drought
	35 - 120	MS	7.5YR5/4	-	2	
245	0 – 32	Org MSL	10YR2/1	-	2	Grade 2 Drought
	32 - 55	MS	10YR5/6	CDOM	2	
	55 - 120	SC	2.5Y5/3, 10Y R5/6	MPOM	2	
246	0 – 35	Org MSL	10YR2/1	-	2	Grade 1
	35 - 55	MS	10YR5/6	CDOM	2	
	55 - 120	C(S)	10YR5/3, 5/6	MPOM	2	
247	0 – 32	MSL	10YR4/3	-	2	Subgrade 3a Drought
	32 - 48	MS	10YR5/6	-	3	
	48 - 120	C	10YR5/3, 5/6	VMPOM	3	
248	0 – 30	Org MSL	10YR2/2	-	3	Grade 2 Drought
	30 - 54	MS	10YR5/4	CDOM	5	
	54 - 120	C(S)	10YR5/6, 5/3	VMPOM	3	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
249	0 – 37	PL	10YR2/1	-	2	Grade 2 Wetness Class III
	37 - 110	C	10YR5/3, 5/6	MPOM	10	
	110 - 120	MS + gravel	10YR5/6	-	20	Abundant seashells
250	0 – 38	Org MCL	10YR2/2	-	2	Grade 1
	38 - 78	MS	10YR5/4	CDOM	5	
	78 - 120	C	10YR5/3, 5/6	MPOM	3	
251	0 – 35	LMS	10YR3/2	-	4	Subgrade 3b Drought
	35 - 120	MS	10YR6/4 + 2/1	-	5	
252	0 – 40	LMS	10YR3/2	-	2	Subgrade 3b Drought
	40 - 65	MS	10YR6/3	-	2	
	65 - 75	C	10YR5/1	-	Stoneless	
	75 - 120	MS	10YR6/4	-	5	
253	0 – 40	SCL	10YR3/4	-	5	Subgrade 3a Drought Subgrade 3a Wetness Class III
	40 - 56	C(S)	10YR5/2, 6/3	MPOM	5	
	56 - 80	MS	10YR5/6	CDOM	35	
	80+ Impenetrable					
254	0 – 38	Org LMS	10YR2/2	-	4	Subgrade 3a Drought
	38 - 120	MS	10YR5/6	-	8	
255	0 – 35	MSL	10YR3/2	-	4	Subgrade 3b Drought
	35 - 65	LMS	10YR4/4	-	5	
	65 - 120	LMS/MS	10YR5/6	-	15	
256	0 – 49	PL	10YR2/1	-	2	Grade 1
	49 - 95	LMS	2.5Y5/6	-	3	
	95 - 120	SC	2.5Y5/6	CDOM	5	
257	0 – 38	Org MSL	10YR2/1	-	3	Grade 2 Drought
	38 - 88	MS	10YR4/4, 5/4	-	2	
	88 - 120	C(S)	10YR5/3, 5/6	CDOM	2	
258	0 – 36	Org LMS	10YR3/1	-	2	Subgrade 3a Drought
	36 - 80	MS	10YR5/6	CDOM	2	
	80 - 120	C(S)	10YR5/3, 5/6	MPOM	2	
259	0 – 33	MSL	10YR4/2	-	2	Grade 2 Drought
	33 - 55	SCL	10YR5/6	-	2	
	55 - 120	SC	10YR5/6	CDOM	2	
260	0 – 34	(Org) MSL	10YR3/1	-	2	Grade 2 Drought
	34 - 120	C(S)	10YR5/6, 5/3	MPOM	2	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
261	0 - 36	MSL	10YR4/3	-	2	Subgrade 3a Drought
	36 - 60	MS	10YR5/6	CDOM	3	
	60 - 120	C	10YR5/6, 5/3	VMPOM	3	
262	0 - 29	MCL	10YR4/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	29 - 58	MS(C)	10YR5/6	CDOM	5	
	58 - 120	C	10YR5/6, 5/3	VMPOM	3	
263	0 - 30	P (H10)	10YR2/1	-	Stoneless	Grade 1
	30 - 70	P (H10)	7.5YR2/1	-	Stoneless	
	70 - 120	P (H6)	7.5YR2/2	-	Stoneless	
264	0 - 26	C	10YR3/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	26 - 120	C	10YR5/2	MPOM	2	
265	0 - 32	LMS	10YR2/2	-	4	Subgrade 3b Drought
	32 - 120	MS	10YR5/4	-	2	
266	0 - 34	LMS	10YR2/2	-	5	Subgrade 3b Drought
	34 - 68	MS	10YR5/4	-	5	
	68 - 120	MS	10YR2/1	-	5	
267	0 - 36	LMS	10YR2/2	-	5	Subgrade 3b Drought
	36 - 120	MS	10YR6/2	-	5	
268	0 - 38	MSL	10YR3/3	-	5	Subgrade 3b Drought
	38 - 120	MS	10YR6/3	-	10	
269	0 - 38	MSL	10YR3/2	-	7	Subgrade 3a/3b Drought
	38 - 95	LMS	10YR5/6	CDOM	10	
	95 - 120	C(S)	10YR5/3, 5/6	MPOM	10	
270	0 - 35	MSL	10YR3/2	-	3	Subgrade 3a Drought
	35 - 92	LMS	10YR4/4, 5/6	-	3	
	92 - 120	SC	2.5Y5/6	CDOM	5	
271	0 - 36	Org MSL	10YR2/2	-	3	Grade 1/2 Drought
	36 - 93	LMS	10YR5/6, 5/3	CDOM	5	
	93 - 120	SC	2.5Y5/6	CDOM	10	
272	0 - 31	Org MSL	10YR2/2	-	3	Grade 2 Wetness Class III
	31 - 58	C	10YR5/3, 5/6	MPOM	5	
	58 - 120	C(S)	2.5Y5/6, 5/3	MPOM	8	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
273	0 – 41	SCL	10YR3/2	-	3	Subgrade 3a Drought
	41 - 85	LMS	10YR5/6	-	3	
	85 - 120	MS	10YR5/6	-	3	
274	0 – 35	MSL	7.5YR4/3	-	2	Subgrade 3a Drought
	35 - 65	MS	10YR5/6	CDOM	2	
	65 - 120	C(S)	10YR5/3, 5/6	MPOM	2	
275	0 – 35	MSL	7.5YR4/3	-	2	Subgrade 3a Drought
	35 - 58	MS	10YR5/6	-	2	
	58 - 120	C(S)	2.5Y5/3, 10YR5/6	MPOM	3	
276	0 – 36	LMS	7.5YR4/3	-	3	Subgrade 3b Drought
	36 - 77	MS	10YR5/6	-	3	
	77 - 120	C(S)	10YR5/6, 5/3	CDOM	3	
277	0 – 37	SCL	10YR4/2	-	2	Grade 2 Drought
	37 - 65	SC	10YR5/6	-	2	
	65 - 120	C	10YR5/3, 5/6	VMPOM	2	
278	0 – 40	MCL	10YR3/2	-	3	Subgrade 3a Wetness Class III
	40 - 120	C	10YR5/3, 5/6	VMPOM	5	
279	0 – 37	PL	10YR2/1	-	2	Grade 2 Drought
	37 - 57	MS	10YR5/2	-	5	Abundant shell fragments
	57 - 120	C	10YR5/2	CDOM	10	
280	0 – 36	C	10YR2/2	-	4	Subgrade 3a Wetness Class III
	36 - 120	C	10YR5/2	CDOM	3	
281	0 – 37	(Org) C	10YR2/1	-	3	Subgrade 3a Wetness Class III
	37 - 120	C	10YR5/2	CDOM	3	
282	0 – 34	LMS	10YR3/2	-	5	Subgrade 3b Drought
	34 - 80	MS	10YR6/3	-	2	
	80 - 120	MS	10YR2/2	-	2	
283	0 – 30	LMS	10YR3/2	-	5	Subgrade 3b Drought
	30 - 80	MS	10YR4/4	-	5	
	80 - 120	MS	10YR5/4	-	5	
284	0 – 30	MSL	7.5YR4/3	-	7	Subgrade 3b Drought
	30 - 70	MS	7.5YR5/6	-	35	
	70+ Impenetrable					

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
285	0 - 34	MSL	10YR4/4	-	4	Subgrade 3b Drought
	34 - 120	MS	10YR5/4, 5/6	-	5	
286	0 - 40	MSL	10YR4/4	-	7	Subgrade 3b Drought
	40 - 80	MS	10YR5/6	-	10	
	80 - 120	C	10YR5/3, 5/6	MPOM	5	
287	0 - 30	SCL	10YR3/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	30 - 55	C	10YR5/3, 5/6	MPOM	5	
	55 - 120	SC	2.5Y5/6	MPOM	8	
288	0 - 37	PL	10YR2/2	-	1	Grade 2 Wetness Class III
	37 - 58	C	10YR5/3, 5/6	MPOM	3	
	58 - 120	SC	2.5Y5/3, 5/6	MPOM	5	
289	0 - 27	MCL	10YR3/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	27 - 82	C	10YR5/3, 5/6	MPOM	5	
	82 - 120	C(S)	2.5Y5/3, 5/6	MPOM	10	
290	0 - 38	SCL	10YR3/3	-	2	Subgrade 3a Wetness Class III
	38 - 55	C	10YR5/3, 5/6	MDOM	5	
	55 - 120	SC	2.5Y5/6	MDOM	5	
291	0 - 32	MSL	7.5YR4/2	-	2	Subgrade 3a Drought
	32 - 60	MS	10YR5/6	-	2	
	60 - 120	C(S)	2.5Y5/3, 10YR5/6	MPOM	3	
292	0 - 36	MSL	10YR4/4	-	2	Subgrade 3b Drought
	36 - 70	MS	10YR5/6	-	2	
	70 - 120	C(S)	10YR5/3, 5/6	MPOM	3	
293	0 - 35	SCL	10YR4/4	-	3	Subgrade 3a Wetness Class III
	35 - 120	C	10YR5/6	CDOM	3	
294	0 - 35	M/HCL	10YR4/3	-	3	Grade 2 Drought
	35 - 61	SC	10YR5/6	CDOM	2	
	61 - 120	C	10YR5/3, 5/6	VMPOM	2	
295	0 - 26	C	10YR4/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	26 - 70	C	10YR5/2	MPOM	5	
	70 - 120	C(S)	10YR5/2	MPOM	5	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
296	0 - 34	PL	10YR2/1	-	2	Grade 1
	34 - 44	C	10YR4/6	CDOM	3	
	44 - 58	MS	10YR5/2	-	10	
	58 - 120	C	10YR5/2	MDOM	5	
297	0 - 20	C	10YR3/2	-	5	Subgrade 3a Drought Subgrade 3a Wetness Class III
	20 - 120	C	10YR5/2	CDOM	3	
298	0 - 30	C	10YR3/2	-	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	30 - 120	C	10YR5/2	MDOM	3	
299	0 - 30	MSL	10YR3/2	-	5	Subgrade 3b Drought
	30 - 80	MS	10YR6/2	-	5	
	80 - 120	MS	10YR5/2	-	30	
300	0 - 30	MSL	10YR3/2	-	5	Subgrade 3a Drought
	30 - 38	P (H10)	10YR3/3	-	2	
	38 - 80	MS + gravel	10YR5/2	CDOM	45	
	80+ Impenetrable					
301	0 - 34	MSL	10YR4/4	-	8	Subgrade 3a Drought
	34 - 42	LMS	10YR4/2	-	5	
	42 - 70	MS	10YR5/6	-	10	
	70 - 120	C	10YR5/3, 5/6	MPOM	10	
302	0 - 35	LMS	10YR4/4	-	4	Subgrade 3b Drought
	35 - 60	MS	10YR5/6	-	5	
	60 - 120	C	10YR5/6, 5/3	MPOM	5	
303	0 - 38	MSL	10YR4/4	-	5	Subgrade 3a Drought
	38 - 49	MS	10YR5/6	-	5	
	49 - 120	C	10YR5/6, 5/3	MPOM	5	
304	0 - 33	MCL	10YR2/2	-	3	Subgrade 3a Wetness Class III
	33 - 72	C	10YR5/3, 5/6	MPOM	5	
	72 - 120	SC	2.5Y5/6	MPOM	5	
305	0 - 39	Org SCL	10YR2/1	-	2	Grade 2 Wetness Class III
	39 - 78	C	10YR5/3, 5/6	MPOM	5	
	78 - 120	C(S)	2.5Y5/6, 5/2	MPOM	5	
306	0 - 48	SCL	10YR2/2	-	3	Grade 2 Wetness Class III
	48 - 120	C(S)	2.5Y5/3, 5/6	MPOM	5	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
307	0 - 40	MCL	7.5YR3/3	-	2	Grade 2 Drought Wetness Class III Grade 2
	40 - 59	C(S)	10YR5/6	MDOM	5	
	59 - 120	SC	2.5Y5/6	MDOM	5	
308	0 - 30	SCL	10YR4/4	-	5	Subgrade 3a Drought
	30 - 55	SC	10YR5/6	-	5	
	55 - 120	C(S)	10YR5/6, 5/3	MPOM	5	
309	0 - 36	C	10YR4/4	-	5	Subgrade 3a Drought Subgrade 3a Wetness Class III
	36 - 45	C	10YR5/3	MPOM	5	
	45 - 80	C(S)	10YR4/6	VMPOM	5	
	80 - 120	C	2.5Y5/2, 10YR5/6	VMPOM	5	
310	0 - 30	C	7.5YR3/2	CDOM	3	Subgrade 3a Drought Subgrade 3a Wetness Class III
	30 - 120	C	2.5Y5/3, 5/2	VMPOM	3	
311	0 - 26	C	10YR3/2	CDOM	5	Subgrade 3a Drought Subgrade 3a Wetness Class III
	26 - 120	C	2.5Y5/2	MPOM	3	
312	0 - 32	MCL	10YR3/2	-	5	Grade 2 Drought Wetness Class III Grade 2
	32 - 120	C	2.5Y5/3, 5/2	MPOM	Stoneless	
313	0 - 30	Org MCL	10YR3/1	-	Stoneless	Grade 1
	30 - 45	MCL	10YR3/2	-	Stoneless	
	45 - 60	C	2.5Y5/1	CDOM	Stoneless	
	60 - 78	MS(C)	2.5Y6/4	-	5	
	78 - 120	C	2.5Y5/2	CDOM	Stoneless	
314	0 - 42	PL	7.5YR3/2	-	Stoneless	Grade 1
	42 - 76	MS	2.5Y6/4	-	5	
	76 - 120	C	2.5Y5/1	CDOM	Stoneless	
315	0 - 32	MCL	10YR3/2	-	3	Grade 2 Drought Wetness Class III Grade 2
	32 - 120	C	2.5Y5/3	CDOM	Stoneless	
316	0 - 36	MCL	7.5YR4/4	-	3	Subgrade 3a/3b Drought
	36 - 120	MS	10YR6/2	-	5	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
317	0 - 30	MCL	7.5YR4/4	-	3	Subgrade 3b Drought
	30 - 80	LMS	2.5Y5/6	CDOM	5	
	80 - 120	MS	2.5Y5/6	CDOM	5	
318	0 - 40	SCL	7.5YR4/4	-	8	Subgrade 3a Drought
	40 - 60	SCL	2.5Y5/6	CDOM	15	
	60 - 85	LMS	2.5Y5/6	CDOM	5	
	85 - 120	MS	2.5Y5/6, 5/2	CDOM	10	
319	0 - 39	MSL	10YR4/4	-	5	Subgrade 3a Drought
	39 - 59	MS	10YR5/6	-	5	
	59 - 120	C	10YR5/6, 5/3	MPOM	5	
320	0 - 38	SCL	10YR3/3	-	3	Subgrade 3a Drought
	38 - 56	MS + C	10YR5/6	CDOM	3	
	56 - 75	C	10YR5/6, 5/3	MPOM	3	
	75 - 120	C	10YR5/2	MPOM	Stoneless	
321	0 - 38	MCL	10YR3/2	-	4	Subgrade 3a Wetness Class III
	38 - 72	C	10YR5/3, 5/6	MPOM	5	
	72 - 120	SC	2.5Y5/6	MPOM	10	
322	0 - 39	SCL	10YR3/2	-	5	Subgrade 3a Wetness Class III
	39 - 61	C	10YR5/3, 5/6	MPOM	3	
	61 - 120	SC	2.5Y5/6	MPOM	10	
323	0 - 33	MCL	10YR3/2	-	8	Grade 2 Drought Wetness Class III Grade 2
	33 - 120	C	2.5Y5/3	MPOM	3	
324	0 - 30	Org MCL	10YR2/2	-	5	Wetness Class III Grade 2
	30 - 120	C	2.5Y5/2	MDOM	2	
325	0 - 38	MCL	10YR3/2	-	3	Grade 1
	38 - 88	Org MCL	10YR3/1	-	Stoneless	
	88 - 120	SC	2.5Y5/2	CDOM	5	
326	0 - 40	MSL	10YR4/4	-	5	Subgrade 3a Drought
	40 - 58	MS	10YR5/6	-	8	
	58 - 85	C(S)	2.5Y5/3, 5/6	MDOM	5	
	85 - 120	MS	2.5Y5/6	MDOM	5	
327	0 - 40	MSL	10YR4/4	-	5	Subgrade 3a Drought
	40 - 58	LMS	10YR5/6, 5/3	CDOM	8	
	58 - 79	SCL	2.5Y5/6, 5/3	CDOM	5	
	79 - 90	SC	2.5Y5/6, 5/3	CDOM	10	
	90 - 120	MS	2.5Y5/6	CDOM	5	

Field data : Hand Auger Borings						
Boring No.	Depth (cm)	Texture	Colour	Mottles	Stone content (%)	Grade and Limiting Factor
328	0 - 35	MSL	10YR4/4	-	8	Subgrade 3a Drought
	35 - 48	LMS	10YR5/6	CDOM	5	
	48 - 95	C	10YR5/3, 5/6	MPOM	5	
	95 - 120	SC	2.5Y5/6	MPOM	10	
329	0 - 29	SCL	10YR3/3	-	2	Subgrade 3a Wetness Class III
	29 - 78	C	10YR5/3, 5/6	MPOM	2	
	78 - 120	SC	2.5Y5/6	MDOM	2	
330	0 - 38	SCL	10YR3/3	-	2	Subgrade 3a Wetness Class III
	38 - 69	C(S)	10YR5/6, 5/3	MDOM	2	
	69 - 120	SC	2.5Y5/6	MDOM	2	
331	0 - 35	MCL	10YR3/3	-	2	Grade 2 Wetness Class III
	35 - 83	SC	10YR5/6	CDOM	3	
	83 - 120	SC	2.5Y5/6	MDOM	3	
332	0 - 32	MCL	10YR3/2	-	7	Grade 2/3a Drought Wetness Class III Grade 2
	32 - 120	C	2.5Y5/3	VMPOM	5	
333	0 - 28	MCL	10YR3/2	-	7	Subgrade 3a Drought
	28 - 120	C	2.5Y5/3	MPOM	5	
334	0 - 38	MSL	7.5YR3/3	-	2	Subgrade 3a Drought
	38 - 50	MS	10YR5/6	-	2	
	50 - 120	C	10YR5/3, 5/6	MPOM		
335	0 - 38	SCL	10YR3/3	-	2	Subgrade 3a Drought
	38 - 55	MS + C	10YR5/6	-	2	
	55 - 120	C	10YR5/3, 5/6	MPOM	2	
336	0 - 32	SCL	10YR3/2	-	24	Grade 2/3a Drought Wetness Class III Subgrade 3a
	32 - 95	C	10YR5/3, 5/6	MPOM	2	
	95 - 120	SC	2.5Y5/6	MPOM	2	
337	0 - 35	SCL	10YR3/2	-	8	Subgrade 3a Drought
	35 - 120	MS	10YR5/4	-	10	
338	0 - 32	MCL	10YR3/2	-	6	Subgrade 3a Drought
	32 - 42	C + MS	2.5Y5/2	MDOM	5	
	42 - 120	C	2.5Y6/2	VMPOM	2	

Appendix I: Key

Textures:

(S)	Sandy
(C)	Clayey
MS	Medium sand
LMS	Loamy medium sand
MSL	Medium sandy loam
SCL	Sandy clay loam
MCL	Medium clay loam
HCL	Heavy clay loam
C	Clay
P	Peat
LP	Loamy peat
PL	Peaty loam
Org	Organically enriched
h	Humic
(H10)	Humification on Van Post Scale

Colours: All colours are defined according to the Munsell soil colour system (Munsell Colour Company Inc. Baltimore, Maryland 21218, USA)

Mottles:

FDOM	Few distinct ochreous mottles
CDOM	Common distinct ochreous mottles
MDOM	Many distinct ochreous mottles
MPOM	Many prominent ochreous mottles
VMPOM	Very many prominent ochreous mottles

Stones: Stones were small to medium angular and sub-angular flints with few rounded quartzite

APPENDIX II

Soil Pit Data

Soil pit data

**Pit 1: Slope - Level
Land use – Maize**

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 33	Organic Medium sandy loam	10YR2/1 (black)	None	5% small to medium flints	-	-	-	-	Abundant very fine and fine	Non-calcareous	-	Abrupt, smooth
33 - 75	Medium sand	10YR5/6 (yellowish brown)	None	15% small to medium flints	Single grain	-	Loose	Moderate	Common very fine and fine	Non-calcareous	-	Clear, smooth
75 – 100+	Sandy clay	10YR5/3, 5/6 (brown, yellowish brown)	Many distinct ochreous mottles	5% small to medium flints	Weakly developed very coarse prismatic	<0.5% biopores	Firm	Poor	Common very fine and fine	Non-calcareous	-	

Wetness Class I

ALC Grade: Grade 2

Main limiting factor: Droughtiness

Pit 2: Slope - Level
Land use – Potatoes

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 38	Medium sandy loam	10YR2/2 (very dark brown)	None	5% small to medium flints	-	-	-	-	Abundant very fine and fine	Non-calcareous	-	Abrupt, smooth
38 - 55	Medium sand	10YR5/6 (yellowish brown)	None	5% small to medium flints	Single grain	-	Loose	Moderate	Common very fine and fine	Non-calcareous	-	Clear, smooth
55 – 90+	Clay with sandy inclusions	10YR5/6, 5/3 (yellowish brown, brown)	Many distinct ochreous mottles	5% small to medium flints	Weakly developed coarse angular blocky	<0.5%	Firm	Poor	Few very fine and fine	Non-calcareous	-	

Wetness Class II

ALC Grade: Subgrade 3a

Main limiting factor: Droughtiness

Pit 3: Slope - Level
Land use – Barley

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 34	Peat (Humified)	10YR2/1 (black)	None	2% small to medium flints	-	-	-	-	Abundant very fine and fine	Non-calcareous	-	Abrupt, smooth
34 - 55	Medium sand	10YR5/6 (yellowish brown)	Common distinct ochreous mottles	5% small to medium flints	Single grain	-	Loose	Moderate	Common very fine and fine	Non-calcareous	-	Clear, smooth
55 – 90+	Clay	10YR5/3, 5/6 (brown, yellowish brown)	Common distinct ochreous mottles	5% small to medium flints	Weakly developed coarse angular blocky	<0.5%	Firm	Poor	Few very fine and fine	Non-calcareous	-	

Wetness Class III

ALC Grade: Grade 2

Main limiting factor: Wetness and workability

Pit 4: Slope - Level
Land use – Onions

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 36	Peaty loam	10YR2/1 (black)	None	2% small to medium flints	-	-	-	-	Abundant very fine and fine	Non-calcareous	-	Abrupt, smooth
36 - 80	Medium sand	10YR5/2 (greyish brown) becoming 10YR5/6 (yellowish brown)	Common distinct ochreous mottles	2% small to medium flints	Single grain	-	Loose	Moderate	Common very fine and fine	Non-calcareous	-	

Wetness Class I

ALC Grade: Grade 2

Main limiting factor: Droughtiness

Pit 5: Slope - Level
Land use – Wheat

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 36	Medium sandy loam	10YR3/3 (dark brown)	None	2% small to medium flints	-	-	-	-	Abundant very fine and fine	Non-calcareous	-	Abrupt, smooth
36 - 61	Sandy clay loam	10YR4/4, 5/6 (dark yellowish brown, yellowish brown)	Many distinct ochreous mottles	10% small to medium flints	Moderately developed medium to coarse sub-angular blocky	>0.5%	Firm	Moderate	Common very fine and fine	Non-calcareous	-	Clear, smooth
61 – 90+	Medium sand	10YR5/3, 5/6 (brown, yellowish brown)	Many distinct ochreous mottles	10% small to medium flints	Single grain	-	Loose	Moderate	Few very fine and fine	Non-calcareous	-	

Wetness Class I

ALC Grade: Subgrade 3a

Main limiting factor: Droughtiness

**Pit 6: Slope - Level
Land use – Barley**

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 26	Clay	10YR4/2 (dark greyish brown)	None	3% small to medium flints	-	-	-	-	Abundant very fine and fine	Calcareous	-	Abrupt, smooth
26 - 70	Clay	10YR5/2 (greyish brown)	Many prominent ochreous mottles	5% small to medium flints	Weakly developed coarse angular blocky	<0.5%	Firm	Poor	Common very fine and fine	Calcareous	-	Clear, smooth
70 – 100+	Clay with sandy inclusions	10YR5/2 (greyish brown)	Many prominent ochreous mottles	5% small to medium flints	Weakly developed very coarse angular blocky	<0.5%	Firm	Poor	Common very fine and fine	Calcareous	-	

Wetness Class III

ALC Grade: Subgrade 3a

Main limiting factor: Droughtiness and wetness and workability

Pit 7: Slope - Level
Land use – Sugar beet

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate Content	Manganese	Horizon Boundary
0 – 32	Medium clay loam (slightly humic)	10YR3/2 (very dark greyish brown)	None	5% small to medium flints	-	-	-	-	Abundant very fine and fine	Calcareous	-	Abrupt, smooth
32 - 80+	Clay	2.5Y5/3 (light olive brown)	Many prominent ochreous mottles	3% small to medium flints	Weakly developed coarse prismatic	<0.5%	Firm	Poor	Common very fine and fine	Very calcareous	Few	

Wetness Class III

ALC Grade: Grade 2

Main limiting factor: Droughtiness and wetness and workability

APPENDIX III

Statement of Soil Physical Characteristics

Statement of Soil Physical Characteristics

Soil Type I Variant i

Topsoil

Texture	Medium sandy loam or loamy medium sand very occasionally sandy clay loam or medium clay loam
Colour	10YR3/2, very dark greyish brown
Mottles	None
Stones	Typically 5% (range 2 - 10%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	36 cm (Median thickness 36 cm, range 28 - 55 cm)

Subsoil

Texture	Medium sand
Colour	Variable but mostly 10YR6/4, light yellowish brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 10% (range 2 - 35%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 84 cm)

Soil Type I Variant ii**Topsoil**

Texture	Medium sandy loam occasionally sandy clay loam
Colour	10YR4/4, dark yellowish brown or 10YR3/2, very dark greyish brown
Mottles	None
Stones	Typically 5% (range 2 - 8%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	38 cm (Median thickness 38 cm, range 29 - 41 cm)

Upper Subsoil

Texture	Medium sand or loamy medium sand
Colour	10YR5/2, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 5% (range 2 - 15%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	62 cm (Median thickness 24 cm, range 5 - 57 cm)

Lower Subsoil

Texture	Clay
Colour	10YR5/3, 5/6, brown, yellowish brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 5% (range 2 - 10%) flints
Structure	Weakly developed coarse angular blocky
Consistence	Firm
Structural Condition	Poor
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 58 cm)

Soil Type 2 Variant i

Topsoil

Texture	Medium clay loam or sandy clay loam
Colour	10YR3/2, very dark greyish brown
Mottles	None
Stones	Typically 3% (range 2 - 8%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous to calcareous
Boundary	Abrupt, smooth
Depth	33 cm (Median thickness 33 cm, range 26 - 48 cm)

Subsoil

Texture	Clay or sandy clay
Colour	10YR5/6, yellowish brown or 2.5Y5/3, light olive brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 4% (range 0 - 10%) flints
Structure	Weakly developed coarse angular blocky or weakly developed coarse prismatic
Consistence	Firm
Structural Condition	Poor
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous to very calcareous
Manganese	Occasionally few
Depth	120 cm (Median thickness 87 cm)

Soil Type 2 Variant ii

Topsoil

Texture	Sandy clay loam or medium clay loam
Colour	10YR4/4, dark yellowish brown or 10YR3/2, very dark greyish brown
Mottles	None
Stones	Typically 4% (range 3 - 5%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	39 cm (Median thickness 39 cm, range 35 - 42 cm)

Upper Subsoil

Texture	Sandy clay loam
Colour	10YR5/6, yellowish brown
Mottles	Common distinct ochreous mottles
Stones	Typically 3% (range 0 - 4%) flints
Structure	Moderately developed medium to coarse sub-angular blocky
Consistence	Firm
Structural Condition	Moderate
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	89 cm (Median thickness 50 cm, range 22 - 58 cm)

Lower Subsoil

Texture	Clay
Colour	10YR5/3, 5/6, brown, yellowish brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 4% (range 3 - 5%) flints
Structure	Weakly developed coarse angular blocky
Consistence	Firm
Structural Condition	Poor
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 31 cm)

Soil Type 3**Topsoil**

Texture	Organic medium sandy loam or peaty loam
Colour	10YR2/1, black or 10YR2/2, very dark brown
Mottles	None
Stones	Typically 3% (range 0 - 5%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	31 cm (Median thickness 31 cm, range 28 - 39 cm)

Subsoil

Texture	Clay
Colour	10YR5/3, 5/6, brown, yellowish brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 4% (range 0 - 10%) flints
Structure	Weakly developed coarse angular blocky
Consistence	Firm
Structural Condition	Poor
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	89cm (Median thickness 89 cm)

Soil Type 4 Variant i**Topsoil**

Texture	Humified peat
Colour	10YR2/1, black
Mottles	None
Stones	Typically 1% (range 0 - 2%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	37 cm (Median thickness 37 cm, range 28 - 60 cm)

Subsoil

Texture	Medium sand
Colour	Variable but mostly 10YR6/3, pale brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 10% (range 0 - 25%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 83 cm)

Soil Type 4 Variant ii

Topsoil

Texture	Humified peat or peaty loam
Colour	10YR2/1, black
Mottles	None
Stones	Typically 2% (range 0 - 4%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	35 cm (Median thickness 35 cm, range 30 - 55 cm)

Upper Subsoil

Texture	Medium sand
Colour	Variable but mostly 10YR6/3, pale brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 5% (range 0 - 15%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	63 cm (Median thickness 28 cm, range 18 - 66 cm)

Lower Subsoil

Texture	Clay
Colour	10YR5/6, yellowish brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 4% (range 0 - 10%) flints
Structure	Weakly developed coarse angular blocky
Consistence	Firm
Structural Condition	Poor
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 57 cm)

Soil Type 4 Variant iii

Topsoil

Texture	Peaty loam or loamy peat
Colour	10YR2/1, black
Mottles	None
Stones	Typically 2% (range 0 - 5%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	37 cm (Median thickness 37 cm, range 28 - 41 cm)

Subsoil

Texture	Medium sand
Colour	Variable but mostly 10YR6/4, light yellowish brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 5% (range 0 - 25%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	83 cm (Median thickness 83 cm)

Soil Type 5 Variant i

Topsoil

Texture	Organic medium sandy loam or organic loamy medium sand
Colour	10YR2/1, black
Mottles	None
Stones	Typically 3% (range 0 - 10%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	35 cm (Median thickness 35 cm, range 25 - 50 cm)

Subsoil

Texture	Medium sand
Colour	Variable but mostly 10YR6/3, pale brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 8% (range 0 - 35%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 85 cm)

Soil Type 5 Variant ii**Topsoil**

Texture	Organic medium sandy loam
Colour	10YR2/1, black
Mottles	None
Stones	Typically 3% (range 2 - 7%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	35 cm (Median thickness 35 cm, range 25 - 55 cm)

Upper Subsoil

Texture	Medium sand occasionally loamy medium sand
Colour	10YR5/6, yellowish brown or 10YR5/4, yellowish brown
Mottles	Usually none but occasionally common distinct ochreous mottles
Stones	Typically 5% (range 2 - 25%) flints
Structure	Single grain
Consistence	Loose
Structural Condition	Moderate
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	60 cm (Median thickness 35 cm, range 14 - 70 cm)

Lower Subsoil

Texture	Clay or sandy clay
Colour	10YR5/6, 5/3, yellowish brown, brown
Mottles	Common to very many prominent ochreous mottles
Stones	Typically 3% (range 2 - 10%) flints
Structure	Weakly developed coarse angular blocky
Consistence	Firm
Structural Condition	Poor
Roots	Few very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 25 cm)

Soil Type 6**Topsoil**

Texture	Humified peat
Colour	10YR2/1, black
Mottles	None
Stones	Typically 0% (range 0 - 5%) flints
Roots	Abundant very fine and fine
Calcium carbonate	Non-calcareous
Boundary	Abrupt, smooth
Depth	36 cm (Median thickness 36 cm, range 27 - 80 cm)

Subsoil

Texture	Humified peat
Colour	7.5YR2/1 (black)
Mottles	None
Stones	Typically 0% (range 0%)
Structure	Massive
Roots	Common very fine and fine
Calcium carbonate	Non-calcareous
Manganese	None
Depth	120 cm (Median thickness 84 cm)





