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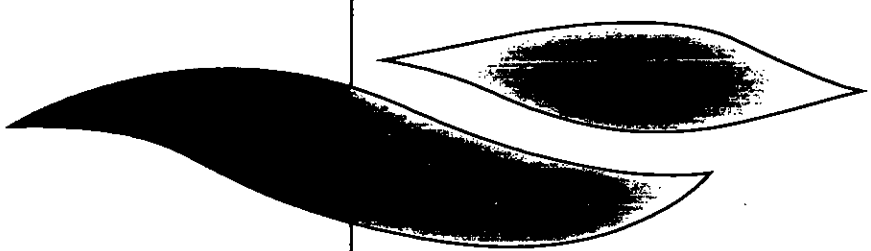

FARMING AND RURAL CONSERVATION AGENCY

An Executive Agency of the Ministry of Agriculture, Fisheries and Food and the Welsh Office

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Land at Hengrove Farm, Staines, Surrey
Proposed Sand and Gravel Extraction

Statement of Physical Characteristics
Map and Report

August 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 4007/098/97
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STATEMENT OF PHYSICAL CHARACTERISTICS

LAND AT HENGROVE FARM, STAINES, SURREY

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) and assessment of site physical characteristics on 21 hectares of land between the London Road (A30) and the Waterloo-Staines railway line, Staines in Surrey. The survey was carried out during August 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). The site is currently the subject of a planning application for minerals extraction, with subsequent restoration to agriculture. Consequently, a statement of physical characteristics has been prepared. This survey supersedes a survey carried out by ADAS in 1982 (Ref: 2007/013/82).

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 in winter barley stubble. Land to the south of the footpath in the south of the site was being grazed by cattle. The areas mapped as 'Other Land' comprise a footpath and raised track.

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.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
2	19.5	95.1	92.8
3a	1.0	4.9	4.8
Other land	0.5	N/A	2.4
Total surveyed area	20.5	100.0	97.6
Total site area	21.0	-	100.0

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 21 borings and 3 soil pits were described.

8. Most of the land on this site has been classified as Grade 2 (very good quality); a small area of Subgrade 3a (good quality) land has been mapped in the south of the site. The key limitation across the entire site is soil droughtiness. Where Grade 2 land is mapped, light topsoils overlie medium loamy upper subsoils and heavier, but permeable, (heavy clay loam and clay) lower subsoils. Topsoils and upper subsoils tend to be very slightly stony, often becoming stonier with depth. The interaction between these soil characteristics and the dry prevailing climate acts to impart slight soil droughtiness, which may act to slightly lower the level and consistency of crop yields. Where the stonier subsoils occur higher within the soil profile, the land has been classified as Subgrade 3a.

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. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TQ 054 719
Altitude	m, AOD	15
Accumulated Temperature	day°C (Jan-June)	1499
Average Annual Rainfall	mm	651
Field Capacity Days	days	132
Moisture Deficit, Wheat	mm	119
Moisture Deficit, Potatoes	mm	115
Overall climatic grade	N/A	Grade 1

13. The combination of rainfall and accumulated temperature at this site mean that there is no overall climatic limitation. However, climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality, the climate is drier than average in regional terms. As a result the likelihood of soil droughtiness problems may be increased. No local climatic factors, such as exposure or frost risk, are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

Site

14. The site is flat and lies at an altitude of approximately 15m AOD. The raised track running west-east in the north of the site lies at a slightly higher altitude than the rest of the site. Nowhere on the site do gradient or microrelief adversely affect agricultural land quality.

Geology and soils

15. The published geology map (BGS, 1981) maps drift deposits of brickearth across most of the site; flood plain gravel is mapped in the south eastern corner.

16. The published soil map for this area (SSEW, 1983) maps the land as Urban. However, soils of the Waterstock and Hucklesbrook Associations are mapped in relatively close proximity to the site. The former are described as 'Deep permeable mainly fine loamy soils variably affected by groundwater. Some deep well drained fine and coarse loamy soils.' (SSEW, 1983). The Hucklesbrook Association is described as 'Well drained coarse loamy and sandy soils, commonly over gravel. Some similar permeable soils affected by groundwater. Usually on flat land.' (SSEW, 1983). The soils on the site were found to broadly concur with the above descriptions, but were typically well drained. Gravelly lower subsoils occur across an area approximate with that underlain by the flood plain gravel.

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, page 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 II, page 12.

Grade 2

19. Grade 2 (very good quality) land has been mapped across most of the site; the key limitation is slight soil droughtiness. Topsoils comprise non-calcareous medium sandy silt loams having 2-5% total flints (of which 1-3% >2 cm in diameter). These overlie similarly textured or medium clay loam upper subsoils which, like the topsoils, are also very slightly stony.

20. In the northern half of the site, topsoils pass into heavy clay loam lower subsoils at approximately 60-80 cm depth. Some of the profiles within this area proved impenetrable to an auger from 70 cm depth. From Pit 3 (see Appendix II), which was dug in this area, it could be seen that such profiles overlie moderately stony (20% total flints) horizons of

medium and heavy clay loam, the latter extending to depth. These profiles are assessed as well drained (Wetness Class I), and have moderately structured subsoils. The interaction between these soil characteristics and the dry prevailing climate means that despite the presence of medium sandy silt loam topsoils, such soils have slightly restricted reserves of soil moisture. Consequently, this land will suffer from slightly lower and less consistent crop yields in some years.

21. In the south west corner of the site and in the central eastern area, the heavier subsoils (heavy clay loam and clay) occur at slightly shallower depths within the soil profile, typically 45-50 cm. Many of these profiles pass into lighter horizons (medium sandy loams and loamy medium sands) at 90-100 cm depth. The stone content of the lower subsoils in these areas range from stoneless to slightly stony (0-15% total flints). Most of the profiles are assessed as moderately well drained (Wetness Class II), due to gleying within 40 cm or, occasionally, the presence of clay deep within the soil profile which impedes drainage. However, the light topsoils means that this land remains workable throughout the year. Again, this land is subject to minor soil droughtiness limitations.

22. Across the remaining area of the site, namely most of the southern half, the lower subsoils are stonier than elsewhere. Although the topsoils and upper subsoils tend to remain very slightly stony, at approximately 40-50 cm the profiles pass into heavy clay loams which are moderately stony (approximately 24% total flints). Most of the profiles within this area proved impenetrable to an auger between 50-60 cm depth. From Pit 2 (see Appendix II), which is typical of these soils, it could be seen that lower subsoils comprise sandy clay loams which pass from being moderately stony (34% total flints) to very stony (48% total flints) at approximately 78 cm depth. These profiles were assessed as well drained (Wetness Class I). In comparison to soil, flints retain less water for uptake by crop roots. However, despite the additional stone content this land is also classified as Grade 2, because of minor soil droughtiness limitations.

Subgrade 3a

23. A small area of Subgrade 3a (good quality) land has been mapped in the south east of the site. This land is also limited by soil droughtiness. In comparison to land mapped as Grade 2, the topsoils are slightly stony (4% flints> 2cm and 8% total flints) and pass into a moderately stony (20% total flints) medium clay loam upper subsoil immediately below the topsoil. The lower subsoils proved impenetrable to a soil auger, but are expected to be similar to those of Pit 2. The higher stone content of the topsoil and upper subsoil means that soil reserves are restricted to a greater extent than land assigned to Grade 2, and Subgrade 3a is the appropriate classification.

SOIL RESOURCES

Soil Units: Consideration for Restoration

24. 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 (page 7) 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 120 cm during survey work. It is likely that soil resources will extend below this depth in some cases.

Unit 1

25. *This unit comprises deep loamy overlying heavier soils at depth.*

26. The topsoils and subsoils of this unit extend across 9.2 ha in the northern half of the site. The topsoil in this unit comprises an average 30 cm of very dark greyish brown (10YR 3/2) non-calcareous medium sandy silt loam. The topsoils are very slightly stony, containing 1-3% flints >2cm and 2-5% total flints. The topsoils comprise moderately developed coarse sub-angular peds of friable consistence.

27. These topsoils overlie upper subsoils of medium sandy silt loam or medium clay loam which extend about 30-40 cm. These are (dark) brown, (dark) yellowish brown and (dark) greyish brown (10YR 4/3, 5/3, 4/4, 5/4, 4/2 and 5/2). At depth some of the horizons have common or many ochreous mottles (reddish yellow and yellowish brown, 75YR and 10YR 5/8). These upper subsoils have a similar stone content to that of the topsoil. They are permeable and moderately structured, having moderately developed coarse sub-angular blocky peds of friable consistence.

28. Lower subsoil horizons comprise a further 40-50 cm of medium clay loam which passes into heavy clay loam at approximately 80 cm depth. These subsoils are moderately stony (20% total flints), and are light yellowish brown and light olive brown (25Y 5/3 and 6/3) with strong brown (75YR 5/6) mottles. These subsoils are also permeable and moderately structured, comprising moderately developed coarse sub-angular blocky peds of friable consistence. Pit 3 (see Appendix II)is typical of this soil unit. It should also be noted that this unit includes Pit 1, which has permeable clay upper subsoils before passing into moderately stony (15% total flints) medium sandy loam lower subsoils at approximately 100 cm depth.

Unit 2

29. The soils in this unit are similar to that of Unit 1, but overlie heavier textured subsoils at moderate depths within the soil profile before passing into lighter textures at depth.

30. The topsoils and subsoils across this unit comprise 3.5 ha in the south west corner of the site. The topsoil and upper subsoil across this unit are the same as those described in paragraphs 26 and 27, respectively. However, across this unit the upper subsoils extend *about 15-20 cm, rather than 30-40 cm.*

31. Lower subsoils comprise a further 25-40 cm of heavy clay loam or clay which either pass into stoneless medium sandy loam or gravelly lower horizons at approximately 90-100 cm. Evidence from Pit 2, which was dug near this area, suggests that it is likely that these gravelly lower horizons comprise sandy clay loam which is moderately to very stony

(approximately 34-48% total flints). These lower subsoils are (greyish) brown, grey or very dark grey (10YR 5/2 and 5/3, 25Y 5/1 and 3/1) with common yellowish brown mottles (10YR 5/6). The majority of these subsoils are permeable and moderately structured, comprising moderately structured sub-angular blocky peds of friable consistence. In the extreme south of the site, where the clay is much more plastic, the subsoils are poorly structured (moderately developed coarse angular blocky peds of firm consistence) and are likely to be of low porosity. As such, this clay is slowly permeable and will act to impede soil drainage.

Unit 3

32. The soils of this unit tend to have more gravelly lower subsoils than Units 1 and 2.

33. The topsoils and subsoils in this unit extend across 8.3 ha in the southern half of the site. The topsoil across this unit is the same as that described in paragraph 26, but does incorporate a slightly stonier area in the south east of the site where the stone content increases to approximately 4% flints >2cm and 8% total flints.

34. These topsoils overlie upper subsoils of medium sandy silt loam or medium clay loam which extend about 20-30 cm. These are (dark) brown, (dark) yellowish brown and (dark) greyish brown (10YR 4/3, 5/3, 4/4, 5/4, 4/2 and 5/2). In some profiles, 10 cm into this horizon, there are common yellowish brown ochreous mottles (10YR 5/8). The upper subsoils are sometimes slightly stonier than those of Units 1 and 2, containing 2-10% total flints. They are permeable and moderately structured, having moderately developed coarse sub-angular blocky peds of friable consistence.

35. The lower subsoils of this unit are more gravelly compared with Units 1 and 2. All of the observations in this unit were impenetrable to the soil auger (typically at 50-60 cm depth) at the time of the survey, because of underlying gravelly deposits and the dry soil conditions. Consequently, the majority of lower subsoil information for this unit is based upon information from a soil pit, Pit 2 (see Appendix II). The lower subsoils in this unit comprise heavy clay loam, passing into sandy clay loam. The heavy clay loam is brown (10YR 5/3) with many reddish yellow (75YR 5/8) mottles. This horizon is moderately stony (approximately 24% total flints), permeable and moderately structured (moderately developed coarse sub-angular blocky peds of firm consistence). The sandy clay loam lower subsoils are greyish brown (25Y 5/2) with many reddish yellow (75YR 5/8) mottles, becoming brown (10YR 5/3) at depth. These subsoils are moderately to very stony (approximately 35-50% total flints) and have been assumed to be permeable and moderately structured.

Table 3: Soil Resource Data

Unit	Average Depth(cm)	Typical Textures	Area (ha)	Volume (m^3)
Topsoil (Units 1, 2 and 3)	30	MSZL	20.5	61,500
Total Volume				**61,500**
Upper Subsoil (Unit 1)	35	MSZL, MCL	9.2	32,200
Upper Subsoil (Unit 2)	20	MSZL, MCL	3.5	7,000
Upper Subsoil (Unit 3)	25	MSZL, MCL	8.3	20,750
Total Volume				**59,950**
Lower Subsoil (Unit 1)	55	MCL, HCL	9.2	50,600
Lower Subsoil (Unit 2)	70	HCL, C, MSL, SCL	3.5	24,500
Lower Subsoil (Unit 3)	65	HCL, SCL	8.3	53,950
Total Volume				**129,050**

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SOURCES OF REFERENCE

British Geological Survey (1981) *Sheet No.269, Windsor, 1:50, 000 (solid and drift edition).* 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) *Sheet 6, Soils of South East England and accompanying legend.*
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 DATA

Contents:

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

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

Boring Header Information

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

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

ARA:	Arable	**WHT:**	Wheat	**BAR:**	Barley
CER:	Cereals	**OAT:**	Oats	**MZE:**	Maize
OSR:	Oilseed rape	**BEN:**	Field beans	**BRA:**	Brassicae
POT:	Potatoes	**SBT:**	Sugar beet	**FCD:**	Fodder crops
LIN:	Linseed	**FRT:**	Soft and top fruit	**FLW:**	Fallow
PGR:	Permanent pasture	**LEY:**	Ley grass	**RGR:**	Rough grazing
SCR:	Scrub	**CFW:**	Coniferous woodland	**OTH**	Other
DCW:	Deciduous woodland	**BOG:**	Bog or marsh	**SAS:**	Set-Aside
HTH:	Heathland	**HRT:**	Horticultural crops	**PLO:**	Ploughed

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

4. **GLEY/SPL**: Depth in centimetres (cm) to gleying and/or slowly permeable layers.

5. **AP (WHEAT/POTS)**: Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS)**: Moisture Balance. (Crop adjusted AP - crop adjusted MD)

7. **DRT**: Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column:

MREL:	Microrelief limitation	**FLOOD:**	Flood risk	**EROSN:**	Soil erosion risk
EXP:	Exposure limitation	**FROST:**	Frost prone	**DIST:**	Disturbed land
CHEM:	Chemical limitation				

9. **LIMIT**: The main limitation to land quality. The following abbreviations are used:

OC:	Overall Climate	**AE:**	Aspect	**ST:**	Topsoil Stoniness
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
EX:	Exposure				

Soil Pits and Auger Borings

1. **TEXTURE**: soil texture classes are denoted by the following abbreviations:

S:	Sand	**LS:**	Loamy Sand	**SL:**	Sandy Loam
SZL:	Sandy Silt Loam	**CL:**	Clay Loam	**ZCL:**	Silty Clay Loam
ZL:	Silt Loam	**SCL:**	Sandy Clay Loam	**C:**	Clay
SC:	Sandy Clay	**ZC:**	Silty Clay	**OL:**	Organic Loam
P:	Peat	**SP:**	Sandy Peat	**LP:**	Loamy Peat
PL:	Peaty Loam	**PS:**	Peaty Sand	**MZ:**	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F: Fine (more than 66% of the sand less than 0.2mm)
M: Medium (less than 66% fine sand and less than 33% coarse sand)
C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:
M: Medium (<27% clay) **H:** Heavy (27-35% clay)

2. **MOTTLE COL**: Mottle colour using Munsell notation.

3. **MOTTLE ABUN**: Mottle abundance, expressed as a percentage of the matrix or surface described:

F: few <2% **C:** common 2-20% **M:** many 20-40% **VM:** very many 40% +

4. **MOTTLE CONT:** Mottle contrast:

F: faint - indistinct mottles, evident only on close inspection
D: distinct - mottles are readily seen
P: prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL**: Ped face colour using Munsell notation.

6. **GLEY:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH**: Stone Lithology - one of the following is used:

HR:	all hard rocks and stones	**FSST:**	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	**CH:**	chalk
MSST:	soft, medium grained sandstone	**GS:**	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock	**GH:**	gravel with non-porous (hard) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT**: the degree of development, size and shape of soil peds are described using the following notation:

Degree of development	**WK:**	weakly developed	**MD:**	moderately developed
	ST:	strongly developed		
Ped size	**F:**	fine	**M:**	medium
	C:	coarse		
Ped shape	**S:**	single grain	**M:**	massive
	GR:	granular	**AB:**	angular blocky
	SAB:	sub-angular blocky	**PR:**	prismatic
	PL:	platy		

9. **CONSIST**: Soil consistence is described using the following notation:

L: loose	**FM**: firm	**EH**: extremely hard
VF: very friable	**VM**: very firm	
FR: friable	**EM**: extremely firm	

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 : HENGROVE FARM, STAINES Pit Number : 1P

Grid Reference: TQ05407200 Average Annual Rainfall : 651 mm
Accumulated Temperature : 1499 degree days
Field Capacity Level : 132 days
Land Use :
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MSZL	10YR32 00	1	3	HR		MDCSAB	FR		
29- 38	MSZL	10YR42 00	0	3	HR		MDCSAB	FR	M	
38- 52	MCL	10YR54 00	0	3	HR		MDCSAB	FR	M	
52-100	C	10YR53 42	0	3	HR	C	MDCAB	FM	P	
100-120	MSL	10YR53 00	0	15	HR	C			M	

Wetness Grade : 1 Wetness Class : I
Gleying :052 cm
SPL : No SPL

Drought Grade : 2 APW : 141mm MBW : 22 mm
APP : 113mm MBP : -2 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : HENGROVE FARM, STAINES Pit Number : 2P

Grid Reference: TQ05307180
Average Annual Rainfall : 651 mm
Accumulated Temperature : 1499 degree days
Field Capacity Level : 132 days
Land Use :
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MSZL	10YR32 00	1	3	HR		MDCSAB	FR		
28- 42	MCL	10YR54 43	0	4	HR		MDCSAB	FR	M	
42- 65	HCL	10YR53 00	0	24	HR	M	MDCSAB	FM	M	
65- 78	SCL	25Y 52 00	0	34	HR	M			M	
78-120	SCL	10YR53 00	0	48	HR				M	

Wetness Grade : 1
Wetness Class : I
Gleying :042 cm
SPL : No SPL

Drought Grade : 2
APW : 126mm MBW : 7 mm
APP : 107mm MBP : -8 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : HENGROVE FARM, STAINES Pit Number : 3P

Grid Reference: TQ05407230 Average Annual Rainfall : 651 mm
Accumulated Temperature : 1499 degree days
Field Capacity Level : 132 days
Land Use :
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MSZL	10YR32 00	0	2	HR		MDCSAB	FR		
29- 44	MCL	10YR54 53	0	2	HR		MDCSAB	FR	M	
44- 70	MCL	10YR54 00	0	2	HR		MDCSAB	FR	M	
70- 80	MCL	25Y 63 53	0	20	HR	M			M	
80-120	SCL	25Y 63 53	0	20	HR	M	MDCSAB	FR	M	

Wetness Grade : 1 Wetness Class : I
Gleying :070 cm
SPL : No SPL

Drought Grade : 2 APW : 147mm MBW : 28 mm
APP : 118mm MBP : 3 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT		ALC	COMMENTS
1	TQ05407230	STB					1	1	109	-10	121	6	3A				DR		2	Imp70 see 3P
1P	TQ05407200	STB		052			1	1	141	22	113	-2	2				DR		2	Porous
2	TQ05307220	STB		045			1	1	122	3	129	14	3A				DR		2	Imp75 see 3P
2P	TQ05307180	STB		042			1	1	126	7	107	-8	2				DR		2	Pit dug to 100
3	TQ05407220	STB		058			1	1	142	23	120	5	2				DR		2	Q fszl t/soil
3P	TQ05407230	STB		070			1	1	147	28	118	3	2				DR		2	Pit dug to 100
4	TQ05507220	STB					1	1	108	-11	119	4	3A				DR		2	Imp70 see 3P
5	TQ05207210	STB		057			1	1	127	8	120	5	2				DR		2	Imp90 see 3P
6	TQ05307210	STB		062			1	1	132	13	119	4	2				DR		2	Imp95 see 3P
7	TQ05407210	STB		059			1	1	138	19	120	5	2				DR		2	Imp100 see 3P
8	TQ05507210	STB					1	1	93	-26	96	-19	3B				DR		2	Imp55 see 2P
9	TQ05207200	STB					1	1	89	-30	89	-26	3B				DR		2	Imp50 see 2P
10	TQ05307200	STB					1	1	100	-19	106	-9	3A				DR		2	Imp60 see 2P
11	TQ05407200	STB		040			2	1	151	32	120	5	2				DR		2	PorousC see1P
12	TQ05107190	STB		028			2	1	127	8	111	-4	2				DR		2	PorousC see1P
13	TQ05207190	STB					1	1	85	-34	85	-30	3B				DR		2	Imp50 see 2P
14	TQ05307190	STB		060			1	1	105	-14	116	1	3A				DR		2	Imp70 see 2P
15	TQ05407190	STB					1	1	87	-32	90	-25	3B				DR		2	Imp55 see 2P
16	TQ05207180	STB		038			2	1	109	-10	119	4	3A				DR		2	Imp72 see 3P
17	TQ05307180	STB		040			1	1	93	-26	98	-17	3B				DR		2	Imp60 see 2P
18	TQ05407180	STB					1	1	79	-40	79	-36	3B				DR		3A	Stonier u/soil
19	TQ05207170	PGR		045			1	1	141	22	118	3	2				DR		2	Deeper see 1P
20	TQ05307170	PGR		050	070		2	1	153	34	120	5	2				DR		2	Deeper see 1P
21	TQ05477186	STB		040			1	1	88	-31	88	-27	3B				DR		2	Imp50 see 2P

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-32	mszl	10YR32 00						0	0	HR	2							
	32-45	mszl	10YR53 00						0	0	HR	2		M					
	45-70	mcl	10YR53 54						0	0	HR	2		M					Imp70 sl.stony
1P	0-29	mszl	10YR32 00						1	0	HR	3	MDCSAB	FR					
	29-38	mszl	10YR42 00						0	0	HR	3	MDCSAB	FR	M				
	38-52	mcl	10YR54 00						0	0	HR	3	MDCSAB	FR	M				
	52-100	c	10YR53 42	10YR58 00	C			Y	0	0	HR	3	MDCAB	FM	P				Porous -not spl
	100-120	msl	10YR53 00	10YR58 00	C			Y	0	0	HR	15			M				Pit 100;Augd 120
2	0-30	fszl	10YR32 00						0	0	HR	1							
	30-45	mcl	10YR44 00						0	0	HR	1			M				
	45-60	mcl	10YR52 00	75YR58 00	M		00FE00 00	Y	0	0	HR	1			M				
	60-75	hcl	10YR52 00	75YR58 00	M		00FE00 00	Y	0	0		0			M				Imp75 sl.stony
2P	0-28	mszl	10YR32 00						1	0	HR	3	MDCSAB	FR					
	28-42	mcl	10YR54 43						0	0	HR	4	MDCSAB	FR	M				
	42-65	hcl	10YR53 00	75YR58 00	M			Y	0	0	HR	24	MDCSAB	FM	M				est. 12% HR
	65-78	scl	25Y 52 00	75YR58 00	M			Y	0	0	HR	34			M				est.. 30% HR
	78-120	scl	10YR53 00					Y	0	0	HR	48			M				est.45%HR;Pit90
3	0-30	mszl	10YR32 00						0	0	HR	2							
	30-40	mszl	10YR42 00						0	0	HR	2			M				
	40-58	mcl	10YR53 00						0	0	HR	2			M				
	58-70	hcl	10YR52 00	10YR58 00	C			Y	0	0	HR	2			M				
	70-120	c	10YR52 00	10YR58 00	C		00MN00 00	Y	0	0	HR	2			P				Prob.porous (1P)
3P	0-29	mszl	10YR32 00						0	0	HR	2	MDCSAB	FR					Q fszl t/soil
	29-44	mcl	10YR54 53						0	0	HR	2	MDCSAB	FR	M				
	44-70	mcl	10YR54 00						0	0	HR	2	MDCSAB	FR	M				
	70-80	mcl	25Y 63 53	75YR56 00	M			Y	0	0	HR	20			M				
	80-120	scl	25Y 63 53	75YR56 00	M			Y	0	0	HR	20	MDCSAB	FR	M				Pit to 100
4	0-32	mszl	10YR32 00						0	0	HR	2							
	32-40	mcl	10YR43 00						0	0	HR	2			M				
	40-70	mcl	10YR53 00						0	0	HR	2			M				Imp70 gravelly
5	0-30	mszl	10YR32 00						0	0	HR	2							
	30-38	mszl	10YR42 00						0	0	HR	2			M				
	38-57	mcl	10YR52 53						0	0	HR	2			M				
	57-90	hcl	10YR53 63	10YR58 00	C			Y	0	0	HR	2			M				Imp90 gravelly
6	0-28	mszl	10YR32 00						0	0	HR	2							
	28-37	mszl	10YR42 00						0	0	HR	2			M				
	37-62	mcl	10YR53 00						0	0	HR	2			M				
	62-95	hcl	10YR52 00	10YR58 00	C			Y	0	0	HR	2			M				Imp95 gravelly
7	0-35	mszl	10YR32 00						0	0	HR	2							
	35-59	mcl	10YR43 53						0	0	HR	2			M				
	59-100	hcl	10YR53 63	10YR58 00	C			Y	0	0	HR	2			M				Imp100 sl.stony

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
8	0-28	mszl	10YR32 00						0	0	HR	1							
	28-40	mszl	10YR42 00						0	0	HR	2		M					
	40-55	mcl	10YR53 00	10YR58 00	F				0	0	HR	2		M					Imp55 sl.stony
9	0-30	mszl	10YR32 00						0	0	HR	2							
	30-50	mszl	10YR52 53						0	0	HR	2		M					Imp50 sl.stony
10	0-30	mszl	10YR32 00						0	0	HR	2							
	30-60	mszl	10YR52 53						0	0	HR	2		M					Imp60 sl.stony
11	0-30	mszl	10YR32 00						0	0	HR	2							
	30-40	mszl	10YR42 00						0	0	HR	2		M					
	40-55	mcl	10YR53 00	10YR58 00	C		00MN00 00	Y	0	0	HR	2		M					
	55-95	c	10YR52 00	10YR58 00	M		00MN00 00	Y	0	0	HR	2		M					
	95-105	scl	10YR58 00	10YR58 00	M		00MN00 00	Y	0	0	HR	2		M					
	105-120	msl	10YR52 00	10YR58 00	M			Y	0	0	HR	2		M					
12	0-28	mszl	10YR43 00						0	0	HR	3							
	28-45	mcl	25Y 53 00	10YR56 00	C			Y	0	0	HR	3		M					
	45-75	c	25Y 31 51	10YR56 00	C			Y	0	0		0		P					Prob.porous (1P)
	75-100	mzcl	10YR53 00	10YR56 00	M			Y	0	0		0		M					Imp100 sl.stony
13	0-28	mszl	10YR42 00						2	0	HR	5							
	28-40	mszl	10YR42 43						0	0	HR	5		M					
	40-50	mcl	10YR54 00						0	0	HR	5		M					Imp50 sl.stony
14	0-28	mszl	10YR32 00						1	0	HR	3							
	28-40	mcl	10YR43 00						0	0	HR	2		M					
	40-60	mcl	10YR44 00						0	0	HR	5		M					
	60-70	mcl	10YR53 00	75YR58 00	M			Y	0	0	HR	8		M					Imp70 sl.stony
15	0-30	mszl	10YR32 00						2	0	HR	6							
	30-40	mcl	10YR44 00						0	0	HR	10		M					
	40-55	hcl	10YR44 00						0	0	HR	10		M					Imp55 sl.stony
16	0-29	mszl	10YR32 00						0	0	HR	2							
	29-38	mszl	10YR42 00						0	0	HR	2		M					
	38-45	mcl	10YR52 53	10YR58 00	C			Y	0	0	HR	2		M					
	45-72	hcl	10YR52 00	10YR58 00	C			Y	0	0	HR	2		M					Imp72 sl.stony
17	0-32	mcl	10YR32 00						0	0	HR	2							
	32-40	mcl	10YR42 00						0	0	HR	2		M					
	40-60	hcl	10YR53 00	10YR58 00	C			Y	0	0	HR	10		M					Imp60 gravelly
18	0-30	mszl	10YR32 00						4	0	HR	8							
	30-50	mcl	10YR44 00						0	0	HR	20		M					Imp50 gravelly
19	0-25	mszl	10YR42 00						0	0	HR	2							
	25-45	mcl	10YR54 00						0	0	HR	2		M					
	45-80	mcl	25Y 53 00	10YR58 00	C			Y	0	0		0		M					
	80-90	msl	10YR73 63	10YR58 00	M			Y	0	0		0		M					
	90-120	lms	10YR73 63	10YR58 00	M			Y	0	0	HR	2		M					

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
20	0-28	msz1	10YR32 00						0	0		0							
	28-50	mc1	10YR43 00						0	0		0		M					
	50-70	hc1	10YR42 41	10YR58 00	C			Y	0	0		0		M					
	70-95	c	10YR51 00	10YR58 00	C			Y	0	0		0		P			Y		Plastic -prob spl
	95-120	ms1	10YR62 00	10YR68 00	M			Y	0	0		0		M					
21	0-30	msz1	10YR32 00						0	0	HR	3							
	30-40	msz1	10YR42 00						0	0	HR	2		M					
	40-50	hc1	10YR52 00	10YR58 00	C			Y	0	0	HR	2		M					Imp50 gravelly