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WEST SUSSEX MINERALS PLAN  
SITE 13 : HAMBROOK  
AGRICULTURAL LAND CLASSIFICATION  
ALC MAP & REPORT  
OCTOBER 1993

**WEST SUSSEX MINERALS PLAN  
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AGRICULTURAL LAND CLASSIFICATION REPORT**

**1.0 Summary**

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites in West Sussex. The work forms part of MAFF's statutory input to the preparation of the West Sussex Minerals Plan.

1.2 Approximately 60 hectares of land relating to Site 13 south of Racton Park Farm, Hambrook near Chichester was surveyed in October 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 43 soil auger borings and 5 soil inspection pits were assessed in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the land use on the site was mostly cereals but with small areas of turnips, permanent grass and oilseed rape in the south-west, north and middle of the site respectively.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for the site.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	4.5	7.5	9.3
3b	44.0	73.7	90.7
Non-agricultural land	1.2	2.2	100.0 (48.5 ha.)
Woodland	9.4	15.7	
Urban	0.4	0.6	
Agricultural buildings	0.2	0.3	
Total area of site	59.7	100.0	

1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 The agricultural land on the site has been classified as Subgrades 3a and 3b with soil droughtiness as the key limitation. The area shown as Subgrade 3a, good quality land, experiences a moderate limitation due to the presence of very stony lower subsoils at depth. The area shown as Subgrade 3b, moderate quality land, contains moderately stony topsoils overlying subsoils which are very stony throughout. This results in a significant restriction of both profile available water for plant growth, and the range of crops that can tolerate such conditions.

**2.0 Climate**

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

2.2 The main parameters used in the assessment of the overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site. However, climatic factors do interact with soil factors to influence soil wetness and soil droughtiness. Moderately high soil moisture deficits at this locality, due to coastal influence, increase the risk of soil droughtiness. In addition, the location of the site on the windward slope of the Downs results in relatively high field capacity days and average annual rainfall. This increases the likelihood of soil wetness.

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

Table 2 : Climatic Interpolation

Grid Reference :	SU 784 086
Altitude (m) :	40
Accumulated Temperature (days) :	1504
Average Annual Rainfall (mm) :	846
Field Capacity (days) :	178
Moisture Deficit, Wheat (mm) :	108
Moisture Deficit, Potatoes (mm) :	103
Overall Climatic Grade :	1

### 3.0 Relief

3.1 The majority of the site is slightly undulating, lying at an altitude in a range between 35m and 40m AOD. In the north-west of the site, the land gently rises from approximately 27m to 35m AOD. Nowhere on the site does relief or gradient impose any limitation to the land quality.

### 4.0 Geology and Soil

4.1 BGS Sheet 316, Fareham (1971) shows the majority of the site to be underlain by River and Valley Gravels with Coombe Deposits. A narrow band of Upper Chalk is shown to underlie the slightly steeper land along the north-west boundary of the site.

4.2 The soil type for the site, as shown on the Soil Survey map of South East England (SSEW, 1983, 1:250,000), comprises the Charity 1 Association. These soils are described as 'well drained fine silty and fine silty over clayey soils, locally very flinty, some shallow over flint gravel' (SSEW, 1983). Detailed field examination confirms this, in particular the locally shallow and flinty nature of the soils over most of the site.

### 5.0 Agricultural Land Classification

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

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

#### Subgrade 3a

5.3 Two small areas of land along the eastern boundary of the survey area have been classified as Subgrade 3a, good quality agricultural land. Soil droughtiness is the key limitation. Profiles typically comprise medium silty clay loam topsoils which are slightly stony (3% hard rock >2cm by volume; 9% total hard rock by volume). These overlie slightly stony

(3-12% total hard rock by volume) heavy clay loam upper subsoils to a depth of approximately 55-65cm. Below this, profiles are moderately to extremely stony (ranging from 25% to over 70% total hard rock by volume). This layer generally proved impenetrable to an auger. Pit 5, dug within this mapping unit, became impenetrable to digging at 65cm, although rooting was evident at this depth. The impenetrable nature of this horizon meant that it was necessary to assume that roots could penetrate a further 20cm into the profile to a depth of 85cm. However, the interaction of soil textures, profile stone contents and moderate subsoil structural conditions with the local climatic regime means that this land can be classified as no higher than Subgrade 3a. Consequently, there is a moderate restriction on the profile available water in this land and the range of crops that can tolerate such conditions.

### **Subgrade 3b**

5.4 The majority of agricultural land on the site has been classified as Subgrade 3b, moderate quality agricultural land, due to a significant risk of soil droughtiness. Most of the soil auger borings within this mapping unit proved to be impenetrable below the topsoil, or the upper subsoil. Pits 1-4 were dug to investigate the soil conditions below these layers. Topsoils comprise medium silty clay loams and, occasionally, medium clay loams. Topsoils are slightly stony, with approximately 3-7% hard rock > 2cm by volume; 8-15% total hard rock by volume. Medium clay loam upper subsoils overlie heavy clay loam or clay lower subsoils. Soil inspection pits 1 and 2, dug north of Hambrook Buildings, have moderately stony (45-50% total hard rock by volume) upper subsoils which pass into extremely stony (70+ % total hard rock by volume) lower subsoils at approximately 55cm. Both pits proved impenetrable to digging at approximately 80-85cm. Soil inspection pits 3 and 4 have less stony upper subsoils (29% and 5% total hard rock by volume, respectively). These pass into very or extremely stony horizons (60-70+ % total hard rock by volume) at approximately 40-45cm. Pit 3 proved impenetrable to digging at 70cm; Pit 4 at 60cm. Roots were observed to depth in each of these profiles.

5.5 The impenetrable nature of the above profiles means that assumptions were made regarding rooting depths and profile stoniness beneath the depth reached by digging. The nature of the underlying geology has made it possible to assume that profiles will not become any less stony at depth. For each of pits 1-4 it has been assumed that roots can penetrate a further 20cm into the profile from the depth at which it became impenetrable to digging. The combination of this restricted rooting, soil textures, profile stone contents and the moderate subsoil structural conditions with the local climatic regime means that this land can be graded no higher than Subgrade 3b. There is a significant restriction on the profile available water in this land and the range of crops that can tolerate such conditions.

### **Non-Agricultural**

5.6 The Non-Agricultural marked on the map is occupied by a farm track and a footpath.

### **Woodland**

5.7 The Woodland shown on the map mostly comprises established deciduous trees.

### **Urban**

5.8 The Urban shown on the map is occupied by a hard surfaced bridleway.

## APPENDIX I

### DESCRIPTION OF THE GRADES AND SUB-GRADES

#### **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 on the 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.

#### **Grade 3 : Good To Moderate Quality Agricultural Land**

Land with moderate limitations which affect the choice of crops, 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.

#### **Sub-grade 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.

#### **Sub-grade 3B : Moderate Quality Agricultural Land**

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

#### **Grade 4 : Poor Quality Agricultural Land**

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

#### **Grade 5 : Very Poor Quality Agricultural Land**

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

## **Urban**

Built-up or 'hard' uses with relatively little potential for a return to agriculture : housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

## **Non-agricultural**

'Soft' uses where most of the land could be returned relatively easily to agriculture, including : private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

## **Woodland**

Includes commercial and non-commercial woodland.

## **Agricultural Buildings**

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

## **Open Water**

Includes lakes, ponds and rivers as map scale permits.

## **Land Not Surveyed**

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

## APPENDIX II

### REFERENCES

- \* MAFF (1988), Agricultural Land Classification of England And Wales : revised guidelines and criteria for grading the quality of agricultural land.
- \* Meteorological Office (1989), Climatological Data for Agricultural Land Classification.
- \* British Geological Survey (1957), Sheet No.317, Chichester, 1:50,000

## APPENDIX III

### DEFINITION OF SOIL WETNESS CLASSES

#### **Wetness Class I**

The soil profile is not wet within 70cm depth for more than 30 days in most years.

#### **Wetness Class II**

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

#### **Wetness Class III**

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

#### **Wetness Class IV**

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

#### **Wetness Class V**

The soil profile is wet within 40cm depth for 211-335 days in most years.

#### **Wetness Class VI**

The soil profile is wet within 40cm depth for more than 335 days in most years.

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)



## APPENDIX IV

### SOIL PIT AND SOIL BORING DESCRIPTIONS

- Contents :
- \* Soil Abbreviations : Explanatory Note
  - \* Soil Pit Descriptions
  - \* Database Printout : Boring Level Information
  - \* Database Printout : Horizon Level Information

## SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

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

### Boring Header Information

1. GRID REF : national 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    HRT : Horticultural Crops    PGR : Permanent Pasture    LEY : Ley Grass    RGR : Rough Grazing  
SCR : Scrub    CFW : Coniferous Woodland    DCW : Deciduous Woodland    HTH : Heathland    BOG : Bog or Marsh  
FLW : Fallow    PLO : Ploughed    SAS : Set aside    OTH : Other

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

4. GLEY/SPL : Depth in cm to gleying or slowly permeable layers.

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

6. MB (WHEAT/POTS) : Moisture Balance.

7. DRT : Best grade according to soil droughtiness.

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

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

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

OC : Overall Climate    AE : Aspect    EX : Exposure    FR : Frost Risk    GR : Gradient    MR : Microrelief  
FL : Flood Risk    TX : Topsoil Texture    DP : Soil Depth    CH : Chemical    WE : Wetness    WK : Workability  
DR : Drought    ER : Soil Erosion Risk    WD : Combined Soil Wetness/Droughtiness    ST : Topsoil Stoniness

### Soil Pits and Auger Borings

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

S : Sand    LS : Loamy Sand    SL : Sandy Loam    SZL : Sandy Silt Loam    CL : Clay Loam    ZCL : Silty Clay Loam  
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 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

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

6. STONE LITH : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone

SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone

FSSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk

GH : gravel with non-porous (hard) stones GS : gravel with porous (soft) stones

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

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

- degree of development WK : weakly developed MD : moderately developed ST : strongly developed

- ped size F : fine M : medium C : coarse VC : very coarse

- ped shape S : single grain M : massive GR : granular AB : angular blocky SAB : sub-angular blocky PR : prismatic  
PL : platy

8. CONSIST : Soil consistence is described using the following notation:

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

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G : good M : moderate P : poor

10. POR : Soil porosity. If a soil horizon has less than 0.5% biopores > 0.5 mm, a 'Y' will appear in this column.

11. IMP : If the profile is impenetrable a 'Y' will appear in this column at the appropriate horizon.

12. SPL : Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

13. CALC : If the soil horizon is calcareous, a 'Y' will appear in this column.

14. 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 : WSUSSEX MINS SITE 13 Pit Number : 1P

Grid Reference: SU78450857 Average Annual Rainfall : 846 mm  
 Accumulated Temperature : 1504 degree days  
 Field Capacity Level : 178 days  
 Land Use : Cereals  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR42 00	4	10		WDCSAB
30- 50	MCL	10YR54 00	0	45		
50-100	C	75YR56 00	0	70		

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

Drought Grade : 3B APW : 84 mm MBW : -24 mm  
 APP : 81 mm MBP : -22 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Droughtiness





SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 13 Pit Number : 4P

Grid Reference: SU78570887 Average Annual Rainfall : 846 mm  
 Accumulated Temperature : 1504 degree days  
 Field Capacity Level : 178 days  
 Land Use : Cereals  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR43 00	2	5		MDCSAB
28- 45	MCL	10YR44 00	0	5		MDCSAB
45- 80	GH	75YR46 00	0	0		

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

Drought Grade : 3B APW : 78 mm MBW : -30 mm  
 APP : 79 mm MBP : -24 mm

FINAL ALC GRADE : 3B  
 MAIN LIMITATION : Droughtiness





SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					DRT
1	SU78400890	CER			1	2	87	-21	90	-13	3B		DR	3B	IMPEN 55
1P	SU78450857	CER			1	2	84	-24	81	-22	3B		DR	3B	PIT DUG TO 80
2	SU78500890	CER			1	2	47	-61	47	-56	4		DR	4	IMPEN 28-Q DR
2P	SU78300855	CER			1	2	73	-35	74	-29	3B		DR	3B	PIT DUG TO 85
3	SU78600890	CER			1	2	67	-41	67	-36	3B		DR	3B	IMPEN 45
3P	SU77970830	TUR			1	2	83	-25	80	-23	3B		DR	3B	PIT DUG TO 70
4	SU78000880	PGR	NW	07	1	2	44	-64	44	-59	4		DR	4	IMPEN 25-Q DR
4P	SU78570887	CER			1	2	78	-30	79	-24	3B		DR	3B	PIT DUG TO 60
5	SU78100880	PGR			1	2	49	-59	49	-54	4		DR	4	IMPEN 30-Q DR
5P	SU08670880	CER			1	2	102	-6	110	7	3A		DR	3A	PIT DUG TO 65
7	SU78300880	PGR			1	2	85	-23	87	-16	3B		DR	3B	IMPEN 55
8	SU78400880	CER			1		53	-55	53	-50	4		DR	4	IMPRN 32-Q DR
9	SU78500880	CER			1	2	53	-55	53	-50	4		DR	4	IMPEN 30-Q DR
10	SU78600880	CER			1	2	68	-40	68	-35	3B		DR	3B	IMPEN 40
11	SU78700880	CER			1	2	140	32	116	13	1		WK	2	AUGD 100
12	SU78800880	CER			1	2	119	11	115	12	2		DR	2	IMPEN 90
13	SU77800870	CER			1	2	52	-56	52	-51	4		DR	4	IMPEN 30-Q DR
16	SU78100870	OSR			1	2	48	-60	48	-55	4		DR	4	IMPEN 30-Q DR
17	SU78200870	OSR			1	2	65	-43	65	-38	3B		DR	3B	IMPEN 40
18	SU78300870	OSR			1	2	58	-50	58	-45	3B		DR	4	IMPEN 35-Q DR
19	SU78400870	CER			1	2	62	-46	62	-41	3B		DR	3B	IMPEN 40-Q DR
20	SU78500870	CER			1	2	60	-48	60	-43	3B		DR	3B	IMPEN 38
22	SU78700870	CER			1	2	65	-43	65	-38	3B		DR	3B	IMPEN 40
23	SU78800870	CER			1	2	52	-56	52	-51	4		DR	4	IMPEN 32-Q DR
24	SU77800860	CER			1	2	50	-58	50	-53	4		DR	4	IMPEN 25-Q DR
27	SU78100860	OSR			1	2	73	-35	73	-30	3B		DR	3B	IMPEN 45
28	SU78200860	OSR			1	2	96	-12	105	2	3A		DR	3B	IMPEN 65
29	SU78300850	OSR			1	2	64	-44	64	-39	3B		DR	3B	IMPEN 40
30	SU78400860	CER			1	2	59	-49	59	-44	3B		DR	3B	IMPEN 40
31	SU78500860	CER			1	2	81	-27	85	-18	3B		DR	3B	IMPEN 58
32	SU78600860	CER			1	2	124	16	113	10	2		DR	2	IMPEN 85
33	SU78710860	CER			1	2	109	1	108	5	3A		DR	3A	IMPEN 85
34	SU77800850	CER			1	2	43	-65	43	-60	4		DR	4	IMPEN 25-Q DR
38	SU78200850	OSR			1	2	72	-36	72	-31	3B		DR	3B	IMPEN 45
39	SU78300850	OSR			1	2	59	-49	59	-44	3B		DR	3B	IMPEN 35
40	SU78400850	CER			1	2	71	-37	74	-29	3B		DR	3B	IMPEN 55
41	SU78500850	CER			1	2	130	22	100	-3	2		DR	2	TO DEPTH
42	SU78600850	CER			1	2	68	-40	68	-35	3B		DR	3B	IMPEN 45
43	SU78700850	CER			1	2	61	-47	61	-42	3B		DR	3B	IMPEN 40
44	SU77800840	CER			1	2	51	-57	51	-52	4		DR	4	IMPEN 30-Q DR
47	SU78200840	TUR			1	2	60	-48	60	-43	3B		DR	3B	IMPEN 35
49	SU78300830	CER			1	2	52	-56	52	-51	4		DR	4	IMPEN 30-Q DR

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SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN	FROST	CHEM	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
51	SU78500840	CER			1	2	80	-28	80	-23	3B			DR	3B	IMPEN 50
52	SU78000830	TUR			1	2	51	-57	51	-52	4			DR	4	IMPEN 30-Q DR
54	SU78100830	TUR			1	2	65	-43	65	-38	3B			DR	3B	IMPEN 40
57	SU78500830	CER			1	2	68	-40	68	-35	3B			DR	3B	IMPEN 45-Q DR
58	SU78850887	CER			1	2	108	0	111	8	3A			DR	3A	IMPEN 80

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-30	mzc1	10YR43 00					5	0	HR	10						
	30-48	hc1	10YR44 00					0	0	HR	5			M			
	48-55	hc1	75YR56 00					0	0	HR	1			M			
1P	0-30	mzc1	10YR42 00					4	0	HR	10	WDCSAB	FR				Y
	30-50	mc1	10YR54 00					0	0	HR	45			FR	M		Y
	50-100	c	75YR56 00					0	0	HR	70			FM	M		
2	0-28	mc1	10YR42 00					3	0	HR	8						
2P	0-27	mzc1	10YR43 00					7	0	HR	15	MDCSAB	FR				Y
	27-60	mc1	10YR54 00					0	0	HR	50			FR	M		
	60-105	gh	75YR54 00					0	0		0					M	
3	0-38	mc1	10YR43 00					7	0	HR	15						
	38-45	hc1	10YR44 00					0	0	HR	25			M			
3P	0-25	mc1	10YR32 00					4	0	HR	8	MDCSAB	FR				Y
	25-40	mc1	10YR43 00					0	0	HR	29	MDCSAB	FR	M			Y
	40-90	hc1	10YR56 00					0	0	HR	60			FM	M		
4	0-25	mzc1	10YR43 00					3	0	HR	8						
4P	0-28	mc1	10YR43 00					2	0	HR	5	MDCSAB	FR				Y
	28-45	mc1	10YR44 00					0	0	HR	5	MDCSAB	FM	M			
	45-80	gh	75YR46 00					0	0		0			FM	M		
5	0-25	mzc1	10YR43 00					3	0	HR	9						
	25-30	mc1	10YR43 44					0	0	HR	30					M	
5P	0-30	mzc1	10YR43 00					2	0	HR	5	WDCSAB	FR				Y
	30-65	hc1	10YR44 00					0	0	HR	2	MDCSAB	FR	M			Y
	65-85	gh	75YR56 00					0	0		0			FM	M		
7	0-26	mc1	10YR43 00					1	0	HR	4						
	26-48	mc1	10YR44 00					0	0	HR	3					M	
	48-55	mc1	10YR44 00					0	0	HR	30					M	
8	0-24	mzc1	10YR43 00					1	0	HR	5						
	24-32	mzc1	10YR44 00					0	0	HR	30					M	
9	0-25	mzc1	10YR43 00					1	0	HR	3						
	25-30	mzc1	10YR44 00					0	0	HR	25					M	
10	0-26	mzc1	10YR42 00					1	0	HR	3						
	26-40	mc1	10YR44 00					0	0	HR	12					M	
11	0-25	mzc1	10YR43 00					1	0	HR	3						
	25-35	hc1	10YR44 00					0	0	HR	3					M	
	35-65	c	75YR46 00					0	0	HR	3					M	
	65-120	c	10YR56 00	00MN00	00	F		0	0	HR	2					M	Y

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS	STR	POR	IMP	SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT					
12	0-26	mzc1	10YR42 00					1	0	HR	3						
	26-45	hc1	10YR43 00					0	0	HR	10		M				
	45-70	hc1	10YR54 56					0	0	HR	1		M				
	70-90	c	10YR58 00	00MNO0	00	F		0	0	HR	5		M	Y			
13	0-30	mzc1	10YR43 00					4	0	HR	10						
16	0-20	mzc1	10YR42 00					6	0	HR	12						
	20-30	mzc1	10YR56 00					0	0	HR	15		M				
17	0-30	mzc1	10YR42 00					5	0	HR	12						
	30-40	mzc1	10YR56 00					0	0	HR	15		M				
18	0-25	mzc1	10YR42 00					4	0	HR	10						
	25-35	hzc1	10YR43 00					0	0	HR	15		M				
19	0-30	mc1	10YR43 00					4	0	HR	10						
	30-40	mc1	10YR54 00					0	0	HR	20		M				
20	0-26	mzc1	10YR42 00					3	0	HR	8						
	26-35	mc1	10YR44 00					0	0	HR	25		M				
	35-38	mc1	10YR44 00					0	0	HR	40		M				
22	0-27	mzc1	10YR43 00					1	0	HR	3						
	27-40	mc1	10YR44 00					0	0	HR	30		M				
23	0-26	mc1	10YR43 00					1	0	HR	5						
	26-32	mzc1	10YR44 00					0	0	HR	30		M				
24	0-25	mzc1	10YR43 00					4	0	HR	10						
	25-30	mzc1	10YR54 00					0	0	HR	15		M				
27	0-30	mzc1	10YR42 00					4	0	HR	9						
	30-45	mc1	10YR53 00					0	0	HR	15		M				
28	0-30	mzc1	10YR42 00					3	0	HR	8						
	30-45	mzc1	10YR54 00					0	0	HR	10		M				
	45-65	hzc1	75YR56 00					0	0	HR	15		M				
29	0-25	mzc1	10YR42 00					5	0	HR	12						
	25-40	mzc1	10YR43 00					0	0	HR	15		M				
30	0-28	mc1	10YR42 00					8	0	HR	15						
	28-40	mc1	10YR54 00					0	0	HR	20		M				
31	0-26	mzc1	10YR43 00					3	0	HR	10						
	26-35	mc1	10YR44 00					0	0	HR	20		M				
	35-55	mc1	10YR44 00					0	0	HR	25		M				
	55-58	mc1	10YR56 00					0	0	HR	25		M				

-----MOTTLES----- PED -----STONES----- STRUCT/ SUBS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED COL.	STONES				STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC
32	0-25	mzc1	10YR42 00					1	0	HR	3							
	25-55	hc1	10YR44 00					0	0	HR	12			M				
	55-65	hc1	10YR44 00					0	0		0			M				
	65-78	c	10YR58 00					0	0		0			M				
	78-120	c	10YR58 00					0	0	HR	50			M				
33	0-35	mc1	10YR42 00					7	0	HR	10							
	35-55	hc1	75YR44 00					0	0	HR	10			M				
	55-80	mc1	75YR44 00					0	0	HR	10			M				
	80-85	c	75YR44 00					0	0	HR	25			M				
34	0-25	mzc1	10YR43 00					4	0	HR	10							
38	0-20	mzc1	10YR42 00					5	0	HR	10							
	20-30	mzc1	10YR54 00					0	0	HR	11			M				
	30-45	hzc1	75YR56 00					0	0	HR	15			M				
39	0-30	hzc1	10YR42 00					3	0	HR	9							
	30-35	hzc1	10YR54 00					0	0	HR	15			M				
40	0-30	mc1	10YR42 00					11	0	HR	18							
	30-55	mc1	10YR54 00					0	0	HR	30			M				
41	0-30	mc1	10YR42 00					8	0	HR	18							
	30-70	mc1	10YR54 00					0	0	HR	15			M				
	70-120	mzc1	75YR44 00					0	0	HR	20			M				
42	0-25	mzc1	10YR42 00					3	0	HR	8							
	25-45	mzc1	10YR44 54					0	0	HR	30			M				
43	0-35	mc1	10YR43 00					7	0	HR	15							
	35-40	hc1	10YR44 00					0	0	HR	10			M				
44	0-25	mzc1	10YR43 00					2	0	HR	9							
	25-30	mzc1	10YR54 00					0	0	HR	15			M				
47	0-35	mzc1	10YR43 00					5	0	HR	11							
49	0-30	mzc1	10YR42 00					5	0	HR	10							
51	0-35	mzc1	10YR42 00					7	0	HR	15							
	35-50	mc1	10YR54 00					0	0	HR	5			M				
52	0-30	mzc1	10YR43 00					6	0	HR	11							
54	0-25	mzc1	10YR43 00					4	0	HR	10							
	25-40	mzc1	10YR54 00					0	0	HR	15			M				

-----MOTTLES----- PED -----STONES----- STRUCT/ SUBS

SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
57	0-38	mc1	10YR42 00						7	0	HR	15						
	38-45	hc1	75YR56 00						0	0	HR	15					M	
58	0-28	mc1	10YR43 00						5	0	HR	8						
	28-78	hc1	75YR56 00						0	0	HR	5						M
	78-80	c	75YR46 00						0	0	HR	15						M