4203-242-93

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West Sussex Minerals Plan
Site 9: Aldingbourne Estate
Agricultural Land Classification
ALC Map & Report
December 1993

WEST SUSSEX MINERALS PLAN
SITE 9: ALDINGBOURNE ESTATE
AGRICULTURAL LAND CLASSIFICATION, REPORT

1. 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 40 hectares of land relating to Site 9: Aldingbourne Estate near Chichester was surveyed in November 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 41 soil auger borings and 4 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 was either maize or cereal stubble or permanent grassland grazed by cattle.

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.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
2	16.7	41.4	43.4
3a	14.6	36.2	37.9
3b	7.2	17.9	18.7
Non-Agricultural	1.1	2.7	100% (38.5 ha)
Urban	0.2	0.5	
Farm Buildings	0.4	1.0	
Open Water	0.1	0.3	
Total area of site	40.3 ha	100%	

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 site has been classified as Grades 2, 3a and 3b. The land is principally limited by soil droughtiness. This is caused by the interaction between stony medium textured soils and climatic factors. Grade 2 land has a very slight drought limitation due to very

slightly and slightly stony topsoils over moderately stony subsoils. Subgrade 3a land was mapped where slightly stony topsoils overlie moderately to very stony subsoils. Subgrade 3b land was commonly found to have a moderately stony topsoil and very stony subsoils. The stone content restricts the water that can be held by the soil and which can subsequently be made available for crop growth.

2. Climate

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

2.2 The main parameters used in the assessment of 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.

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations.

Table 2: Climatic Interpolation

Grid Reference:	SU922072
Altitude (m):	26
Accumulated Temperature (days):	1518
Average Annual Rainfall (mm):	810
Field Capacity (days):	168
Moisture Deficit, Wheat (mm):	113
Moisture Deficit, Potatoes (mm):	109
Overall Climatic Grade:	1

3. Relief

3.1 The site lies at an altitude between 25 and 30m AOD. Overall the site is relatively flat, with a few gentle slopes most commonly towards the eastern and western boundaries. At no point within the site does gradient or microrelief affect agricultural land quality.

4. Geology and Soil

4.1 The British Geological Survey published map, Sheet 317, Chichester (1:63360, 1957) shows the majority of the site to be underlain by Quaternary Valley Gravel. Towards the eastern and western boundaries Cretaceous Upper Chalk is shown, and towards the south Quaternary Marine Gravel.

4.2 The Soil Survey of England and Wales, published map, Sheet 6, Soils of South East England (1:250000, 1983) shows the entire site to be underlain by soils from the Charity 1 Association. It describes them as 'well drained fine silty and fine silty over clayey soils, locally very flinty, some are shallow over flint gravel' (SSEW, 1983). Soils of this general nature were found at this site.

5. Agricultural Land Classification

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

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

5.3 Grade 2

Land of this quality covers the largest proportion of the site and it occurs in the centre and extreme east of the site. Soils in this area are subject to a slight drought limitation due to the content of flints and hard stones in the soil profile. Pit 2 (see Appendix III) is typical of this grade. Soils typically consist of a slightly stony (c.6% flints by volume) medium silty clay loam topsoil overlying a moderately stony (c.22% flints by volume) well structured medium silty clay loam upper subsoil passing to a moderately or very stony (c.35% flints by volume) moderately structured heavy silty clay loam lower subsoil to depth. The drought limitation is caused by the volume of water available in the profile being slightly reduced by the stone content. These soil characteristics combine with local climatic factors to give rise to a slight risk of soil droughtiness. Land of very good quality could be expected to produce high yields of a wide range of agricultural and horticultural crops, however there may be some reduced flexibility with more demanding crops such as winter harvested vegetables and arable root crops.

5.4 Subgrade 3a

Land of good quality is mapped in two discrete units towards the west and east of the site. In the western unit, soils were found to be similar to those described at Pit 1 (Appendix III). These were a moderately stony (c.15% flints by volume) medium silty clay loam topsoil, overlying a moderately stony (c.30% flints by volume) medium silty clay loam upper subsoil, considered to have a moderate structural condition. This passes to a clay horizon containing approximately 50% large flints, which in turn overlies a similar clay horizon to depth which is moderately stony (c.27% flints). Soils in this area were found to have a slight droughtiness limitation due to stone content within the profile restricting the water holding capacity of the soil, which in combination with local climatic factors leads to this subgrade being most appropriate.

Towards the east of the site, soils of this grade are essentially similar to those described above, except that stone content is less variable through the profile. Pit 3 (Appendix III) shows the typical soil profile. This shows a very slightly stony (c.4% stones by volume) medium silty clay loam topsoil, which then passes to a very stony (c.44% stones by volume) moderately structured clay subsoil to depth. The stone volume in

the profile in combination with local climatic factors causes a slight drought stress limitation (see para 5.6). Land of this quality could be expected to produce moderate yields of most arable crops or high yields of a narrower range, principally cereals and grass.

5.5 Subgrade 3b

Land of moderate quality is shown towards the north of the site. Soils here are also essentially similar to those described above except that volumes of stones within the profile are greater causing a greater risk of drought stress. Typically the soils consist of a moderately stony (c.17% flints by volume) medium silty clay loam topsoil. This overlies a very stony (c.45% flints by volume) medium silty clay loam considered to be moderately structured. This passes to a very stony (c.56% flints by volume) medium silty clay loam lower subsoil, also considered to have a moderate structure. Soils of this type were observed at pit 4 (see Appendix III). Land of this quality could be expected to produce moderate yields of a narrow range of crops, principally cereals and grass.

5.6 Drought affected land is subject to restrictions in terms of the type of crop and success of crop growth. This is due to the fact that at some point during, or throughout the growing season, water availability will not match crop demand in most years. On this site this is due to flint contents in the profile reducing the volume of the water retained in the soil matrix, which in combination with local climatic factors leads to the risk of drought stress.

5.7 The areas shown as Non-Agricultural on the accompanying map include a strip of land adjoining a minor road which is planted with young trees, fenced off tracks between fields and an area of scrub used for the storage of agricultural machinery. The area shown as urban is a domestic dwelling and associated grounds.

SOURCES OF REFERENCE

- British Geological Survey (1957) Sheet 317, Chichester, 1:63360, Drift Edition.
- MAFF (1988) Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.
- Meteorological Office (1989) Climatic datasets for Agricultural Land Classification.
- Soil Survey of England and Wales (1983) Soils of South East England, 1:250,000 map and accompanying legend.

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.

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.

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

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 III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a 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
FSST : 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 appropiate 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 9 Pit Number : 1P

Grid Reference: SU92100730
Average Annual Rainfall : 810 mm
Accumulated Temperature : 1518 degree days
Field Capacity Level : 168 days
Land Use :
Slope and Aspect : 01 degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MZCL	10YR43 53	0	15		WKCSAB
26- 39	MZCL	10YR54 00	0	30		
39- 56	C	75YR54 00	0	50		
56- 90	C	75YR56 00	0	27		

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

Drought Grade : 3A
APW : 105mm MBW : -8 mm
APP : 86 mm MBP : -23 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 9 Pit Number : 2P

Grid Reference: SU92550715
Average Annual Rainfall : 810 mm
Accumulated Temperature : 1518 degree days
Field Capacity Level : 168 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR54 00	2	6		
30- 60	MZCL	10YR54 00	0	22		WKMSAB
60-100	HZCL	10YR54 00	0	35		WKCSAB
100-120	HZCL	75YR54 00	0	35		

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

Drought Grade : 2
APW : 136mm MBW : 23 mm
APP : 115mm MBP : 6 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 9 Pit Number : 3P

Grid Reference: SU92950737
Average Annual Rainfall : 810 mm
Accumulated Temperature : 1518 degree days
Field Capacity Level : 168 days
Land Use :
Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR43 00	0	4		WKCSAB
30- 42	HZCL	75YR46 00	0	17		MDCSAB
42- 95	C	10YR46 00	0	44	F	MDCSAB
95-120	C	75YR56 00	0	44	F	

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

Drought Grade : 3A
APW : 112mm MBW : -1 mm
APP : 98 mm MBP : -11 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 9 Pit Number : 4P

Grid Reference: SU92580767
Average Annual Rainfall : 810 mm
Accumulated Temperature : 1518 degree days
Field Capacity Level : 168 days
Land Use : Fallow
Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR43 00	0	17		WKCSAB
30- 56	MZCL	10YR44 00	0	45		
56- 75	MZCL	10YR54 00	0	56		
75- 85	MZCL	10YR54 00	0	56		

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

Drought Grade : 3B
APW : 84 mm MBW : -29 mm
APP : 85 mm MBP : -24 mm

FINAL ALC GRADE : 3B
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	SU92600770	PGR					1	1	75	-38	75	-34	3B				DR	3B	IMPST 50 4P
1P	SU92100730	MZE	W	01			1	1	105	-8	86	-23	3A				DR	3A	PIT 70 AUG 90
2	SU92500760	FLW					1	1	65	-48	65	-44	3B				DR	3B	IMPST 40 4P
2P	SU92550715	PGR					1	1	136	23	115	6	2				DR	2	P1T100 AUG120
3	SU92600760	FLW					1	1	73	-40	73	-36	3B				DR	3B	IMPST 42 4P
3P	SU92950737	MZE	E	01			1	1	112	-1	98	-11	3A				DR	3A	PIT 70 AUG 120
4	SU92700760	FLW					1	1	62	-51	62	-47	4				DR	4	IMPST 40 4P
4P	SU92580767	FLW	E	01			1	1	84	-29	85	-24	3B				DR	3B	PIT 75 AUG 85
5	SU92000750	MZE	E	01			1	1	99	-14	110	1	3A				DR	3A	IMPST 70 1P
6	SU92200750	LIN	SW	01			1	1	86	-27	91	-18	3B				DR	3B	IMPST 58 4P
7	SU92500750	PGR					1	1	88	-25	93	-16	3B				DR	3B	IMPST 60 2P
8	SU92600750	PGR					1	1	51	-62	51	-58	4				DR	4	IMPST 30 4P
9	SU92700750	PGR					1	1	118	5	108	-1	2				DR	3A	IMPST 100 2P
10	SU92830750	MZE					1	1	66	-47	66	-43	3B				DR	3B	IMPST 40 4P
11	SU92900750	MZE	E	01			1	1	149	36	121	12	1					1	NOT IMP 3P
12	SU92000740	MZ	E	01			1	1	77	-36	77	-32	3B				DR	3B	IMPST 48 1P
13	SU92100740	MZE	W	01	028		2	2	76	-37	76	-33	3B				DR	3B	IMPST 48 1P
14	SU92200740	MZE	W	01			1	1	62	-51	62	-47	4				DR	3B	IMPST 38 4P
15	SU92400740	PGR					1	1	82	-31	82	-27	3B				DR	3B	IMPST 50 2P
16	SU92500740	PGR			065		1	1	136	23	110	1	2				DR	2	NOT IMP 2P
17	SU92600740	PGR					1	1	73	-40	73	-36	3B				DR	3B	IMPST 45 3P
18	SU92700740	PGR					1	1	114	1	118	9	3A				DR	3A	IMPST 80 2P
19	SU92900740	MZE	E	01			1	1	62	-51	62	-47	4				DR	4	IMPST 40 3P
20	SU93000740	MZE	E	01			1	1	80	-33	80	-29	3B				DR	3B	IMPST 50 3P
21	SU92000730	MZE	E	01			1	1	85	-28	88	-21	3B				DR	3B	IMPST 55 1P
22	SU92100730	MZE	E	01	028		2	2	65	-48	65	-44	3B				DR	3B	IMPST 40 1P
23	SU92200730	MZE	E	01	068		1	1	107	-6	117	8	3A				DR	3A	IMPST 75 1P
24	SU92300730	PGR					1	1	69	-44	69	-40	3B				DR	3B	IMPST 40 2P
25	SU92400730	PGR					1	1	69	-44	69	-40	3B				DR	3B	IMPST 40 2P
26	SU92500730	PGR					1	1	104	-9	117	8	3A				DR	3A	IMPST 70 2P
27	SU92600730	PGR					1	1	97	-16	104	-5	3A				DR	3A	IMPST 60 2P
28	SU92700730	PGR					1	1	60	-53	60	-49	4				DR	4	IMPST 35 3P
29	SU92900730	MZE	E	01			1	1	83	-30	83	-26	3B				DR	3B	IMPST 50 3P
30	SU93000730	MZE	E	01			1	1	94	-19	102	-7	3A				DR	3A	IMPST 62 3P
31	SU93100730	MZE	SE	01			1	1	125	12	120	11	2				DR	2	IMPST 90 2P
32	SU92100720	MZE	W	01			1	2	54	-59	54	-55	4				DR	3B	IMPST 30 1P
33	SU92200720	MZE	W	01	042		1	1	86	-27	86	-23	3B				DR	3B	IMPST 50 1P
34	SU92500720	PGR					1	1	69	-44	69	-40	3B				DR	3B	IMPST 40 2P
35	SU92600720	PGR					1	1	72	-41	72	-37	3B				DR	3B	IMPST 40 2P
36	SU92900720	MZE	W				1	1	109	-4	107	-2	3A				DR	3A	IMPST 90 2P
37	SU92100710	MZE	W	01			1	2	83	-30	90	-19	3B				DR	3B	IMPST 60 1P
38	SU92500710	PGR					1	1	72	-41	72	-37	3B				DR	3B	IMPST 40 2P

SAMPLE NO.	GRID REF	ASPECT USE	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
39	SU92600710	PGR				1	1	63	-50	63	-46	3B				DR	3B	IMPST 35 2P
40	SU92600700	PGR				1	1	72	-41	72	-37	3B				DR	3B	IMPST 40 2P
41	SU93050722	MZE	E	01		1	1	65	-48	65	-44	3B				DR	3B	IMPST 40 3P

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	0-28	mzcl	10YR43 00						0	0	HR	10						
	28-50	mzcl	10YR54 00						0	0	HR	30		M				
1P	0-26	mzcl	10YR43 53						0	0	HR	15	WKCSAB FR					
	26-39	mzcl	10YR54 00						0	0	HR	30		M				
	39-56	c	75YR54 00						0	0	HR	50		M			Y	
	56-90	c	75YR56 00						0	0	HR	27		M			Y	
2	0-32	mzcl	10YR43 00						0	0	HR	10						
	32-40	mzcl	10YR44 54						0	0	HR	25		M				
2P	0-30	mzcl	10YR54 00						2	0	HR	6						
	30-60	mzcl	10YR54 00						0	0	HR	22	WKMSAB VF	G				
	60-100	hzcl	10YR54 00						0	0	HR	35	WKCSAB FM	M				
	100-120	hzcl	75YR54 00						0	0	HR	35		M				
3	0-33	mzcl	10YR43 00						0	0	HR	5						
	33-40	mzcl	10YR44 00						0	0	HR	10		M				
	40-42	mzcl	10YR44 54						0	0	HR	30		M				
3P	0-30	mzcl	10YR43 00						0	0	HR	4	WKCSAB FR					
	30-42	hzcl	75YR46 00						0	0	HR	17	MDCSAB FM	M				
	42-95	c	10YR46 00			F	00MN00	00	0	0	HR	44	MDCSAB FM	M			Y	
	95-120	c	75YR56 00	75YR53 00	F		00MN00	00	0	0	HR	44		M			Y	
4	0-30	mzcl	10YR43 00						0	0	HR	10						
	30-40	mcl	10YR44 54						0	0	HR	35		M				
4P	0-30	mzcl	10YR43 00						0	0	HR	17	WKCSAB FR					
	30-56	mzcl	10YR44 00						0	0	HR	45		M				
	56-75	mzcl	10YR54 00						0	0	HR	56		M				
	75-85	mzcl	10YR54 00						0	0	HR	56		M				
5	0-36	mcl	10YR43 00						1	0	HR	5						
	36-50	hcl	10YR53 00						0	0	HR	10		M				
	50-70	hcl	10YR53 00						0	0	HR	15		M				
6	0-28	mzcl	10YR43 00						3	0	HR	10						
	28-45	mzcl	10YR54 00						0	0	HR	15		M				
	45-58	mzcl	10YR54 00						0	0	HR	20		M				
7	0-25	mzcl	10YR43 00						0	0	HR	8						
	25-40	mzcl	10YR43 53						0	0	HR	15		M				
	40-60	mzcl	10YR54 00						0	0	HR	20		M				
8	0-30	mzcl	10YR43 53						0	0	HR	15						
	30-32	mzcl	10YR43 53						0	0	HR	40		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	LITH	STRUCT/ TOT	CONSIST	SUBS STR	POR	IMP	SPL	CALC
9	0-30	mzcl	10YR43 00						0	0	HR	8						
	30-85	mzcl	10YR44 54						0	0	HR	20		M				
	85-100	mzcl	10YR54 00						0	0	HR	40		M				
10	0-33	mzcl	10YR43 00						0	0	HR	8						
	33-40	mzcl	10YR44 00						0	0	HR	30		M				
11	0-30	mzcl	10YR43 00						0	0	HR	5						
	30-70	mzcl	10YR56 00						0	0	HR	2		M				
	70-90	hzcl	75YR54 00	75YR56 00	F				0	0	HR	10		M				
	90-120	zc	75YR56 00		F				0	0	HR	3		M				
12	0-32	mzcl	10YR42 00						3	0	HR	10						
	32-40	hzcl	10YR54 00						0	0	HR	15		M				
	40-48	hzcl	10YR54 00						0	0	HR	25		M				
13	0-28	mzcl	10YR43 00						3	0	HR	10						
	28-48	hcl	10YR54 00	10YR58 00	C			Y	0	0	HR	15		M				
14	0-30	mzcl	10YR42 00						3	0	HR	12						
	30-38	mzcl	10YR54 00						0	0	HR	20		M				
15	0-30	mzcl	10YR43 00						0	0	HR	8						
	30-50	mzcl	10YR44 00						0	0	HR	15		M				
16	0-30	mzcl	10YR43 00						0	0	HR	5						
	30-65	mzcl	10YR44 54						0	0	HR	20		M				
	65-120	c	75YR56 00	75YR54 00	C		00MN00 00	Y	0	0	HR	5		M				
17	0-30	mzcl	10YR43 53						0	0	HR	8						
	30-40	mzcl	10YR54 00						0	0	HR	10		M				
	40-45	mzcl	10YR54 00						0	0	HR	50		M				
18	0-35	mzcl	10YR44 00						0	0	HR	10						
	35-80	hzcl	10YR56 00						0	0	HR	3		M				
19	0-30	mzcl	10YR43 00						0	0	HR	10						
	30-40	mzcl	40YR44 00						0	0	HR	40		M				
20	0-30	mzcl	10YR43 00						0	0	HR	8						
	30-40	mzcl	10YR44 54						0	0	HR	10		M				
	40-50	mzcl	10YR44 54						0	0	HR	30		M				
21	0-30	mzcl	10YR43 00						3	0	HR	10						
	30-48	mzcl	10YR54 00						0	0	HR	15		M				
	48-55	mzcl	10YR54 00						0	0	HR	20		M				
22	0-28	mzcl	10YR43 00						2	0	HR	8						
	28-38	hcl	10YR54 00	10YR58 00	C			Y	0	0	HR	15		M				
	38-40	zc	10YR54 00	75YR58 00	C			Y	0	0	HR	20		M				

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
23	0-28	mzcl	10YR43 00						2	0	HR	8						
	28-68	hzcl	10YR54 00	10YR58 00	F				0	0	HR	5		M				
	68-75	zc	10YR54 00	75YR58 00	C			Y	0	0	HR	15		M				
24	0-40	mzcl	10YR44 00						0	0	HR	10						
25	0-40	mzcl	10YR44 00						0	0	HR	10						
26	0-30	mzcl	10YR44 00						0	0	HR	5						
	30-70	hzcl	75YR56 00						0	0	HR	8		M				
27	0-30	mzcl	10YR44 00						0	0	HR	5						
	30-60	hzcl	75YR56 00						0	0	HR	3		M				
28	0-35	mzcl	10YR44 00						0	0	HR	10						
29	0-30	mzcl	10YR43 00						0	0	HR	8						
	30-45	mzcl	10YR44 54						0	0	HR	5		M				
	45-50	mzcl	10YR44 54						0	0	HR	30		M				
30	0-32	mzcl	10YR43 00						2	0	HR	8						
	32-55	hzcl	10YR54 00						0	0	HR	8		M				
	55-62	zc	75YR54 00						0	0	HR	10		M				
31	0-30	mzcl	10YR43 00						1	0	HR	3						
	30-70	mzcl	10YR54 00						0	0	HR	5		M				
	70-85	hzcl	10YR54 00						0	0	HR	2		M				
	85-90	zc	75YR54 56						0	0	HR	2		M				
32	0-30	hzcl	10YR43 00						2	0	HR	6						
33	0-29	mzcl	10YR32 00						1	0	HR	3						
	29-42	hzcl	10YR54 00	75YR56 00	C				0	0	HR	5		M				
	42-50	zc	10YR53 00	75YR56 00	C		10YR62 00	Y	0	0	HR	5		M				
34	0-40	mzcl	10YR44 00						0	0	HR	10						
35	0-40	mzcl	10YR44 00						0	0	HR	5						
36	0-28	mzcl	10YR43 00						3	0	HR	12						
	28-35	zc	10YR54 00			F	00MN00	00	0	0	HR	5		M				
	35-80	zc	75YR54 56			F	00MN00	00	0	0	HR	5		M				
	80-90	zc	75YR54 56			F	00MN00	00	0	0	HR	10		M				
37	0-29	hcl	10YR42 43						2	0	HR	8						
	29-40	zc	10YR54 00						0	0	HR	15		M				
	40-60	zc	75YR54 00						0	0	HR	10		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
38	0-40	mzcl	10YR44 00						0	0	HR	5						
39	0-35	mzcl	10YR44 00						0	0	HR	5						
40	0-40	mzcl	10YR44 00						0	0	HR	5						
41	0-29	mzcl	10YR43 00						2	0	HR	12						
	29-40	hzcl	10YR54 00						0	0	HR	15		M				