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West Sussex Minerals Plan
Site 5: Westhampnett
Agricultural Land Classification
ALC Map & Report
December 1993

WEST SUSSEX MINERALS PLAN
SITE 5: WESTHAMPNETT
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 53 hectares of land relating to Site 5; Westhampnett near Chichester was surveyed in November 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 54 soil auger borings and 3 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 had been recently ploughed and drilled.

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	23.1	43.9	45.0
3a	14.7	27.9	28.7
3b	13.5	25.7	26.3
Non-Agricultural	0.5	1.0	100% (51.3 ha)
Urban	0.6	1.1	
Woodland	0.2	0.4	
Total area of site	52.6	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, soil droughtiness being the key limitation, principally caused by the presence of stone within similar medium and heavy textured profiles. Land classified as Grade 2 covers the majority of the site and has very slightly stony topsoils over slightly to moderately stony subsoils, very slightly restricting water available to crops. Subgrade 3a land has a similar soil profile, but

contains a slightly stony topsoil over very stony subsoils restricting water to a slightly greater degree. Subgrade 3b land covering the remainder of the site has a similar profile to the above, but they contain moderate stone contents in the topsoil, and very stony subsoil horizons, so moderately restricting available water 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:	SU885069
Altitude (m):	25
Accumulated Temperature (days):	1520
Average Annual Rainfall (mm):	811
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 between approximately 23 m AOD and 26 m AOD. The northern half of the site is relatively flat rising in a shallow ridge to the southern section. At the eastern and western boundaries of the site the land gently falls away to a slightly lower level. At no point within the site does altitude 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 site to be underlain by Quaternary Valley Gravel.

4.2 The Soil Survey of England and Wales published map, Sheet 6, Soils of South East England, (1:250,000, 1983), shows the 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 shallow over flint gravel. These soils are naturally well drained and rarely exhibit surface run-off' (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 very good quality covers nearly half of the land at this site and typically consists of soils similar to that found in Pit 1 (see Appendix III). These commonly comprise a very slightly stony (c.3% flints by volume) medium silty clay loam topsoil. This passes to a moderately stony (c.20% flints by volume) moderately structured, heavy silty clay loam upper subsoil. Below this soil textures become heavier, passing to a very slightly stony (c.3% flints by volume) moderately structured silty clay, before passing to a moderately stony (c.20% flints by volume) moderately structured clay at depth. The combination of water retentive heavy subsoil textures and stone contents cause the profiles to be very slightly drought limited, within the local climatic regime such that Grade 2 is appropriate. Land of this quality could be expected to produce high yields of a wide range of arable and horticultural crops, limitations only occurring due to a reduced flexibility in the production of more demanding crops such as winter harvested vegetables and arable root crops.

5.4 Subgrade 3a

Land of good quality has been mapped in three discrete areas throughout the site. The two smaller areas to the north of the site have a similar soil profile to those described above (para 5.3), except that the clayey lower subsoil horizon appears at a shallower depth and as such causes the droughtiness limitation to be more severe.

The larger area of Subgrade 3a to the south of the site has different soil profiles, these being typical of that seen at Pit 2 (Appendix III). Typically soils comprise a slightly stony (c.10% flints by volume) medium silty clay loam topsoil over a very stony (c.50% flints by volume) medium silty clay loam upper subsoil, passing to a very stony (c.56% flints by volume) medium clay loam lower subsoil. Due to the high stone contents, combined with climatic factors, water availability for crops is slightly limited such that this subgrade is appropriate. Land of this quality is considered capable of growing high yields of a narrow range of crops such as cereals and grass or moderate yields of a wide range of crops including oilseed rape, potatoes or sugar beet.

5.5 Subgrade 3b

Land of this quality covers the remaining agricultural area of the site towards the south-west. Soil profiles in this area were similar to those found in Pit 3 (Appendix III). These contain a moderately stony (c.23% flints by volume, approximately 7% > 2 cm) medium clay loam topsoil, over a very stony (c.47% flints by volume), medium clay loam upper subsoil passing to a very stony (between 55 and 65% flints by volume) clay lower subsoil to depth. The very high stone contents of these soils, combined with climatic factors, gives rise to a significant soil droughtiness limitation. Land of this quality is considered capable of producing moderate yields of a narrow range of crops principally cereals and grass.

5.6 Drought affected land is subject to restrictions principally in terms of the type and success of crop growth. This is due to the fact that, at some point during, or throughout the growing season, water supply does not match crop demand. On this site this is primarily due to the presence of hard flints in the profile, restricting the water holding capacity of the soil matrix.

5.7 The areas marked as Non-Agricultural on the accompanying map are an established public footpath across the site left unploughed. The hedge line and strip of scrub partially following the line of a metalled public footpath which is shown as Urban. The area to the south of the site shown as Urban is the car park of the public house which is beyond the site boundary. Towards the north of the site, the small area shown as Urban is the remains of two buildings.

SOURCES OF REFERENCE

- British Geological Survey (1957) Sheet No 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.
- Meterological 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 5 Pit Number : 1P

Grid Reference: SU88300710 Average Annual Rainfall : 808 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 168 days
Land Use : Bare Soil
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR43 53	0	3		
30- 49	HZCL	10YR56 00	0	20		MDCSAB
49- 72	ZC	75YR54 56	0	3		MDCSAB
72-120	C	10YR56 00	0	20		MDCSAB

Wetness Grade : 1 Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 2 APW : 131mm MBW : 17 mm
APP : 112mm MBP : 3 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 5 Pit Number : 2P

Grid Reference: SU88530665 Average Annual Rainfall : 808 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 168 days
Land Use : Bare Soil
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MZCL	10YR43 00	3	10		
28- 43	MZCL	10YR44 00	0	50		
43- 58	MCL	10YR56 00	0	56		

Wetness Grade : 1 Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3B APW : 71 mm MBW : -43 mm
APP : 73 mm MBP : -36 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WSUSSEX MINS SITE 5 Pit Number : 3P

Grid Reference: SU88320650
Average Annual Rainfall : 808 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 168 days
Land Use : Bare Soil
Slope and Aspect : 01 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 32	MCL	10YR43 00	0	23		
32- 42	MCL	10YR44 00	0	47		
42- 68	C	75YR56 00	0	65		
68-120	C	75YR56 58	0	55		

Wetness Grade : 1
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3B
APW : 85 mm MBW : -29 mm
APP : 72 mm MBP : -37 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT	COMMENTS
1	SU88000730	PLO					1	1	110	-3	117	8	3A				DR 3A	IMPST 80 1P
1P	SU88300710	PLO					1	1	131	18	112	3	2				DR 2	PIT 100 AUG120
2	SU88100730	PLO					1	1	146	33	122	13	1				1	AUGD 100 1P
2P	SU88530665	PLO					1	1	71	-42	73	-36	3B				DR 3B	3AT0120 PIT 64
3	SU88000720	PLO					1	1	112	-1	119	10	3A				DR 3A	IMPST 80 1P
3P	SU88320650	PLO	SW	01			1	1	85	-28	72	-37	3B				DR 3B	PROFILE 120
4	SU88100720	PLO					1	1	116	3	114	5	3A				DR 3A	IMPST 92 1P
5	SU88200720	PLO					1	1	88	-25	103	-6	3B				DR 3B	IMPST 70 1P
6	SU88300720	PLO					1	1	90	-23	99	-10	3B				DR 3B	IMPST 65 1P
7	SU88000710	PLO					1	1	123	10	116	7	2				DR 2	AUGD 100 1P
8	SU88100710	PLO					1	1	110	-3	113	4	3A				DR 3A	IMPST 85 1P
9	SU88200710	PLO					1	1	106	-7	114	5	3A				DR 3A	IMPST 80 1P
10	SU88300710	PLO					1	1	107	-6	114	5	3A				DR 3A	IMPST 80 1P
11	SU88000700	PLO	S	01			1	1	110	-3	116	7	3A				DR 3A	IMPST 80 1P
12	SU88100700	PLO					1	1	94	-19	100	-9	3A				DR 3A	IMPST 60 1P
13	SU88200700	PLO	S	01			1	1	142	29	116	7	2				DR 2	1P
14	SU88300700	PLO					1	1	142	29	119	10	2				DR 2	AUGD 100 1P
15	SU88400700	PLO			068		1	1	141	28	118	9	2				DR 2	AUGD 100 1P
16	SU88500690	PLO					1	1	156	43	120	11	1				1	AUGD 100 1P
17	SU88100690	PLO	S	01			1	1	104	-9	117	8	3A				DR 3A	IMPST 70 1P
18	SU88200690	PLO	S	01			1	1	112	-1	119	10	3A				DR 3A	IMPST 75 1P
19	SU88300690	PLO	S	01			1	1	117	4	121	12	3A				DR 3A	IMPST 80 1P
20	SU88400690	PLO	S	01			1	1	94	-19	101	-8	3A				DR 3A	IMPST 60 1P
21	SU88500690	PLO	S	01			1	1	100	-13	114	5	3A				DR 3A	IMPST 70 1P
22	SU88600690	PLO	S	01			1	1	147	34	120	11	1				1	1P
23	SU88700680	PLO	S	01			1	1	120	7	118	9	2				DR 2	IMPST 90 1P
24	SU88100680	PLO	S	01			1	1	86	-27	86	-23	3B				DR 3B	IMPST 50 3P
25	SU88200680	PLO	S	01			1	1	156	43	120	11	1				1	1P
26	SU88300680	PLO	S	01			1	1	68	-45	68	-41	3B				DR 3B	IMPST 40 3P
27	SU88400680	PLO	S	01			1	1	121	8	120	11	2				DR 2	IMPST 90 1P
28	SU88500680	PLO	S	01			1	1	116	3	120	11	3A				DR 3A	IMPST 80 1P
29	SU88600680	PLO	S	01			1	1	67	-46	67	-42	3B				DR 3B	IMPST 40 3P
30	SU88700680	PLO	S	01			1	1	86	-27	86	-23	3B				DR 3B	IMPST 50 2P
31	SU88800680	PLO	S	01			1	1	94	-19	101	-8	3A				DR 3A	IMPST 60 2P
32	SU88900680	PLO	S	01			1	1	91	-22	98	-11	3B				DR 3B	IMPST 65 2P
33	SU88100670	PLO	W	02			1	1	59	-54	59	-50	4				DR 4	IMPST 50 3P
34	SU88200670	PLO					1	1	68	-45	68	-41	3B				DR 3B	IMPST 45 3P
35	SU88300670	PLO					1	1	77	-36	77	-32	3B				DR 3B	IMPST 50 3P
36	SU88400670	PLO					1	1	68	-45	68	-41	3B				DR 3B	IMPST 45 3P
37	SU88500670	PLO					1	1	58	-55	58	-51	4				DR 4	IMPST 40 2P/3P
38	SU88600670	PLO	N	01			1	1	78	-35	78	-31	3B				DR 3B	IMPST 50 2P
39	SU88700670	PLO	N	01			1	1	74	-39	74	-35	3B				DR 3B	IMPST 50 2P

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
40	SU88800670	PLO	N	01			1	1	67	-46	67	-42	3B				DR		3B	IMPST 50 2P
41	SU88900670	PLO	N	01			1	1	60	-53	60	-49	4				DR		4	IMPST 40 2P
42	SU88200660	PLO	W	01			1	1	62	-51	62	-47	4				DR		4	IMPST 42 3P
43	SU88300660	PLO					1	1	69	-44	69	-40	3B				DR		3B	IMPST 45 3P
44	SU88400660	PLO					1	1	64	-49	64	-45	3B				DR		3B	IMPST 41 3P
45	SU88500660	PLO	N	01			1	1	60	-53	60	-49	4				DR		4	IMPST 40 2P/3P
46	SU88600660	PLO	N	01			1	1	79	-34	81	-28	3B				DR		3B	IMPST 55 2P
47	SU88700660	PLO					1	1	77	-36	77	-32	3B				DR		3B	IMPST 50 2P
48	SU88200650	PLO	SW	01			1	1	70	-43	70	-39	3B				DR		3B	IMPST 50 3P
49	SU88300650	PLO					1	1	61	-52	61	-48	4				DR		4	IMPST 40 3P
50	SU88400650	PLO					1	1	79	-34	79	-30	3B				DR		3B	IMPST 50 2P/
51	SU88500650	PLO					1	1	108	-5	110	1	3A				DR		3A	IMPST 80 2P
52	SU88600650	PLO					1	1	77	-36	77	-32	3B				DR		3B	IMPST 50 2P
53	SU88500640	PLO					1	1	86	-27	88	-21	3B				DR		3B	IMPST 55 3P
54	SU88250642	PLO	SW	01			1	1	55	-58	55	-54	4				DR		4	IMPST 40 2P

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
1	0-20	mzcl	10YR43 00						0	0	HR	4						
	20-45	hzcl	10YR44 00						0	0		0		M				
	45-80	c	10YR56 00						0	0	HR	5		M				
1P	0-30	mzcl	10YR43 53						0	0	HR	3						
	30-49	hzcl	10YR56 00						0	0	HR	20	MDCSAB	FM	M		Y	
	49-72	zc	75YR54 56						0	0	HR	3	MDCSAB	FM	M		Y	
	72-120	c	10YR56 00						0	0	HR	20	MDCSAB	FM	M		Y	
2	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-38	hzcl	10YR44 00						0	0	HR	2		M				
	38-68	hzcl	10YR54 00	10YR63 00	C				0	0		0		M				
	68-120	c	10YR56 00						0	0	HR	5		M				
2P	0-28	mzcl	10YR43 00						3	0	HR	10						
	28-43	mzcl	10YR44 00						0	0	HR	50		M				
	43-58	mcl	10YR56 00						0	0	HR	56		M				
3	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-65	mzcl	10YR44 00						0	0	HR	2		M				
	65-80	c	10YR56 00						0	0	HR	25		M				
3P	0-32	mcl	10YR43 00						0	0	HR	23						
	32-42	mcl	10YR44 00						0	0	HR	47		FR	M			
	42-68	c	75YR56 00						0	0	HR	65		FR	M			
	68-120	c	75YR56 58						0	0	HR	55		FR	M			
4	0-20	mzcl	10YR43 00						1	0	HR	5						
	20-40	hcl	10YR44 00						0	0	HR	4		M				
	40-85	c	25Y 56 00						0	0	HR	2		M				
	85-92	hcl	25Y 56 00						0	0	HR	20		M				
5	0-18	mzcl	10YR43 00						1	0	HR	9						
	18-45	c	75YR46 00						0	0	HR	20		M				
	45-70	c	10YR56 00						0	0	HR	10		M				
6	0-30	mzcl	10YR43 00						1	0	HR	10						
	30-45	hzcl	10YR54 00						0	0	HR	15		M				
	45-55	c	10YR56 00						0	0	HR	15		M				
	55-65	c	10YR56 00						0	0	HR	30		M				
7	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-45	hcl	10YR44 00						0	0	HR	6		M				
	45-90	c	10YR56 00						0	0	HR	2		M				
	90-100	c	10YR56 00						0	0	HR	15		M				
8	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-50	mzcl	10YR44 00						0	0	HR	4		M				
	50-85	c	10YR56 00						0	0	HR	20		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
9	0-25	mzcl	10YR43 00						0	0	HR	4						
	25-50	c	10YR56 00						0	0	HR	4		M				
	50-80	c	10YR56 00	00MN00	00	F			0	0	HR	8		M				
10	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-45	c	10YR44 00						0	0	HR	2		M				
	45-80	c	10YR56 00	00MN00	00	C			0	0	HR	10		M				
11	0-25	mzcl	10YR33 00						0	0	HR	8						
	25-60	hzcl	10YR56 00						0	0	HR	3		M				
	60-80	zc	10YR56 00						0	0	HR	3		M				
12	0-25	mzcl	10YR43 00						0	0	HR	4						
	25-50	hzcl	10YR54 00						0	0	HR	8		M				
	50-60	hzcl	10YR54 00						0	0	HR	12		M				
13	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-50	hzcl	10YR54 00						0	0	HR	2		M				
	50-120	zc	10YR56 00						0	0	HR	2		M				
14	0-29	mzcl	10YR43 00						0	0	HR	4						
	29-40	hzcl	10YR44 00						0	0		0		M				
	40-50	hzcl	10YR44 00						0	0	HR	8		M				
	50-120	c	10YR56 00						0	0	HR	2		M				
15	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-40	hzcl	10YR44 00						0	0		0		M				
	40-60	c	10YR56 00						0	0		0		M				
	60-68	c	10YR56 00						0	0	HR	8		M				
	68-90	c	10YR52 54	10YR56 00	M			Y	0	0		0		M				
	90-120	c	10YR56 00					Y	0	0	HR	8		M				
16	0-27	mzcl	10YR43 00						0	0	HR	4						
	27-50	hzcl	10YR44 00						0	0	HR	4		M				
	50-70	hzcl	10YR54 00	10YR56 00	F				0	0	HR	2		M				
	70-120	hzcl	10YR54 00	10YR56 00	C				0	0	HR	2		M				
17	0-25	mzcl	10YR33 00						0	0	HR	7						
	25-70	hzcl	10YR54 00						0	0	HR	5		M				
18	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-55	mzcl	10YR54 00						0	0	HR	1		M				
	55-75	hcl	75YR68 00						0	0	HR	2		M				
19	0-25	mzcl	10YR33 00						0	0	HR	3						
	25-80	hzcl	75YR54 00						0	0	HR	2		M				
20	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-45	hzcl	75YR54 00						0	0	HR	2		M				
	45-60	zc	75YR56 00						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
21	0-20	mzcl	10YR33 00						0	0	HR	5						
	20-40	hzcl	75YR54 00						0	0	HR	1		M				
	40-70	zc	75YR56 00						0	0	HR	2		M				
22	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-80	hzcl	10YR56 00						0	0	HR	2		M				
	80-120	zc	10YR56 00						0	0	HR	4		M				
23	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-65	hzcl	10YR54 00						0	0	HR	3		M				
	65-90	zc	10YR54 00						0	0	HR	5		M				
24	0-25	mzcl	10YR33 00						0	0	HR	7						
	25-50	hzcl	10YR54 00						0	0	HR	3		M				
25	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-120	mzcl	10YR54 00						0	0	HR	2		M				
26	0-25	mzcl	10YR33 00						0	0	HR	7						
	25-40	mzcl	10YR54 00						0	0	HR	7		M				
27	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-65	mzcl	10YR54 00						0	0	HR	2		M				
	65-90	c	75YR68 00						0	0	HR	2		M			Y	
28	0-25	mzcl	10YR33 00						0	0	HR	5						
	25-80	mzcl	10YR54 00						0	0	HR	2		M				
29	0-25	mzcl	10YR33 00						0	0	HR	7						
	25-40	hzcl	10YR54 00						0	0	HR	10		M				
30	0-20	mzcl	10YR33 00						0	0	HR	7						
	20-50	hzcl	10YR54 00						0	0	HR	2		M				
31	0-25	mzcl	10YR33 00						0	0	HR	7						
	25-60	hzcl	10YR54 00						0	0	HR	5		M				
32	0-25	mzcl	10YR33 00						0	0	HR	8						Y
	25-65	hcl	10YR73 00						0	0	CH	40		M				Y
33	0-35	mcl	10YR43 00						0	0	HR	25						
	35-50	mcl	10YR44 00						0	0	HR	60		M				
	50-51	mcl	00ZZ00 00						0	0	HR	60		M				
34	0-30	mcl	10YR43 00						0	0	HR	10						
	30-45	mcl	10YR44 00						0	0	HR	20		M				
35	0-35	mzcl	10YR43 00						0	0	HR	10						
	35-45	mcl	10YR44 00						0	0	HR	25		M				
	45-50	mcl	10YR44 00						0	0	HR	50		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
36	0-30	mcl	10YR43 00						0	0	HR	10						
	30-40	mcl	10YR44 00						0	0	HR	10		M				
	40-45	mcl	10YR44 00						0	0	HR	50		M				
37	0-28	mzcl	10YR43 00						0	0	HR	10						
	28-40	mcl	10YR44 00						0	0	HR	50		M				
38	0-33	mzcl	10YR43 00						0	0	HR	10						
	33-45	mcl	10YR44 00						0	0	HR	15		M				
	45-50	mcl	10YR44 00						0	0	HR	40		M				
39	0-25	mcl	10YR43 00						0	0	HR	8						
	25-45	mcl	10YR44 00						0	0	HR	15		M				
	45-50	mcl	10YR44 00						0	0	HR	40		M				
40	0-35	mcl	10YR43 00						0	0	HR	15						
	35-50	mcl	10YR44 00						0	0	HR	50		M				
41	0-30	mcl	10YR43 00						0	0	HR	10						
	30-40	mcl	10YR44 00						0	0	HR	30		M				
42	0-38	mcl	10YR43 00						0	0	HR	15						
	38-42	mcl	10YR44 00						0	0	HR	50		M				
43	0-35	mcl	10YR43 00						0	0	HR	10						
	35-43	mcl	10YR44 00						0	0	HR	25		M				
	43-45	mcl	10YR44 00						0	0	HR	50		M				
44	0-33	mcl	10YR43 00						0	0	HR	10						
	33-39	mcl	10YR44 00						0	0	HR	15		M				
	39-41	mcl	10YR44 00						0	0	HR	40		M				
45	0-30	mcl	10YR43 00						0	0	HR	10						
	30-34	mcl	10YR44 00						0	0	HR	15		M				
	34-40	mcl	10YR44 00						0	0	HR	40		M				
46	0-30	mcl	10YR43 00						0	0	HR	8						
	30-45	mcl	10YR44 00						0	0	HR	15		M				
	45-55	mcl	10YR44 00						0	0	HR	40		M				
47	0-25	mcl	10YR43 00						0	0	HR	8						
	25-48	mcl	10YR44 00						0	0	HR	10		M				
	48-50	mcl	10YR44 00						0	0	HR	40		M				
48	0-40	mcl	10YR43 00						0	0	HR	15						
	40-50	mcl	10YR44 00						0	0	HR	50		M				
49	0-35	mcl	10YR43 00						0	0	HR	12						
	35-40	mcl	10YR44 00						0	0	HR	40		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
50	0-35	mcl	10YR43 00						0	0	HR	8						
	35-48	mcl	10YR44 00						0	0	HR	8		M				
	48-50	mcl	10YR44 00						0	0	HR	50		M				
51	0-30	mcl	10YR43 00						0	0	HR	5						
	30-60	mcl	10YR44 00						0	0	HR	8		M				
	60-77	hcl	75YR56 00						0	0	HR	10		M				
	77-80	hcl	75YR56 00						0	0	HR	30		M				
52	0-33	mcl	10YR43 00						0	0	HR	8						
	33-45	mcl	10YR44 00						0	0	HR	10		M				
	45-50	mcl	10YR44 00						0	0	HR	40		M				
53	0-38	mcl	10YR43 00						0	0	HR	8						
	38-53	mzcl	10YR44 00						0	0	HR	10		M				
	53-55	mcl	10YR44 00						0	0	HR	40		M				
54	0-30	mcl	10YR43 00						0	0	HR	15						
	30-40	mcl	40YR44 00						0	0	HR	50		M				