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West Oxfordshire District Local Plan

Site 559: Middle Barton

Agricultural Land Classification Report

May 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

WEST OXFORDSHIRE DISTRICT LOCAL PLAN
SITE 559: MIDDLE BARTON

1. Summary

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

1.2 Approximately 4 hectares of land relating to Site 559, south of the village of Middle Barton in West Oxfordshire was surveyed in May 1994. The survey was undertaken at a detailed level of approximately two borings per hectare. A total of 8 borings and two 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 carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the agricultural land was under a grass ley. The Non agricultural land shown comprises a roadside verge.

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 this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% Agricultural Area surveyed
3a	2.7	71.1	73
4	1.0	26.3	27
Non Agricultural	0.1	2.6	100% (3.7 ha)
Total area of Site	3.8	100%	

1.6 The agricultural land at this site has been classified as Grades 3a and 4 with soil droughtiness being the main limitation. The majority of land is classified as Subgrade 3a and comprises very slightly stony (brashy limestone) topsoils over

clayey and fine loamy subsoils which are slightly to very stony; the stone content increasing with depth. The interaction of soil properties, particularly the high stone volumes, with the comparatively dry nature of the local climate results in a moderate restriction to available water reserves and land is classified as Subgrade 3a due to a moderate soil droughtiness limitation. Grade 4 land comprises similar soils but with significantly higher volumes of brashy limestone than that of Subgrade 3a land. As a result available water reserves are severely restricted and land is classified as Grade 4 due to severe soil droughtiness.

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.

Table 2 : Climatic Interpolation

Grid Reference	SP436255
Altitude, (m, AOD)	120
Accumulated Temperature (°days, Jan-June)	1369
Average Annual Rainfall (mm)	706
Field Capacity Days	154
Moisture deficit, wheat (mm)	97
Moisture deficit, potatoes (mm)	85

2.2 The main parameters used in the assessment of an 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. The details in the above table show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk affect the land quality.

2.3 It should be noted, however, that climatic characteristics do interact with soil properties to influence soil wetness and droughtiness. At this particular site, climatic characteristics such as moisture deficits interact with shallow, brashy limestone soils to increase the risk of soil droughtiness problems.

3. Relief

3.1 The site lies at an altitude of approximately 120-130 metres AOD. The land gently undulates and falls predominantly northwards to its lowest point of altitude with gradients not rising above 4°. Nowhere on the site do relief or gradient affect agricultural land quality.

4. Geology and Soils

4.1 The published geology map for the site area, (BGS, 1968, Sheet 218, Chipping Norton 1:63,360) shows the underlying geology to be Jurassic Chipping Norton Limestone to the south and Jurassic Upper Lias Clay to the north on the lower lying land.

4.2 The published soils information for the area (SSEW 1983, Sheet 6, Soils of South East England) shows the entire site to comprise soils of the Aberford association which are described as "Shallow, locally brashy, well drained calcareous fine loamy soils over limestone. Some deeper calcareous soils in colluvium" (SSEW, 1983).

4.3 A detailed inspection of the site found soils similar to those described above, with varying quantities of brashy limestone in the subsoil. Occasionally, there were some deeper, less stony profiles.

5. Agricultural Land Classification

Subgrade 3a

5.1 The majority of land on the site has been classified as Subgrade 3a, good quality agricultural land. Soil profiles are mostly calcareous throughout, well drained (Wetness Class I) and typically comprise heavy clay loam topsoils containing 5-6% total limestones. Of this total, 3% were over 2 cm in diameter. Upper subsoils consist of clay with variable amounts of brashy or soft loose limestone, but typically in the range 15-20%. Lower subsoils comprise similar textures with 10-70% total brashy or soft loose limestone, though this is commonly in the range 30-70%. Occasionally, stone content rises to 80% but this does not increase the overall droughtiness of the soils. Soil Pit 2 is typical of these soils and was dug to a depth of 70 cm, thereafter, becoming impenetrable to dig. Rooting was observed to this depth. An example boring, 2Q, (not a field auger boring) shows that if roots extend to 120 cm depth, it just qualifies for Grade 2 on droughtiness but in view of the stoniness observed and the possibility of it increasing below, it was felt rooting to an intermediate depth was more appropriate, with a resultant grade of 3a. The high profile stone contents restrict the water reserves in the soil available to plants and the combination of these soil properties with climatic characteristics results in a moderate droughtiness limitation and the land is classified as Subgrade 3a

Grade 4

5.2 Land of poor agricultural quality is found in the centre of the site on shallow undulating ridges. In this area soils are very thin over brashy limestone and suffer from severe droughtiness. Profiles typically comprise heavy clay loam topsoils

with 18% total limestones, of which 12% are over 2 cm in diameter. This in itself consistutes a topsoil stoniness limitation to Subgrade 3a. The subsoil consists of approximately 80% brashy limestone in a thin matrix of clay. Soil pit 1 is typical of these soils and was dug to a depth of 50 cm. As with Soil Pit 2, it became impenetrable to dig thereafter. Rooting was evident to 50 cm and is likely to continue a little further. However, it is unlikely that effective rooting reaches 120 cm, but if this were the case, an example boring, 1Q, (not a field auger boring) indicates that there is no overall effect on the droughtiness of these soils. Profiles are well drained and are assigned to Wetness Class I but they do experience a droughtiness limitation. The extremely stony nature of these soils severely restricts water reserves held in the profile and this combined with climatic characteristics results in a classification of Grade 4. Droughty soils such as these severely restrict the range of crops which can tolerate such conditions. The effect on crop growth is that their establishment is impaired, the nutrient capacity of the soil is reduced and eventual yields are lower.

ADAS Ref: 3305/99/94
MAFF Ref: EL33/225A

Resource Planning Team
Guildford Statutory Group
ADAS Reading

REFERENCES

* British Geological Survey (1968), Sheet No. 218 (Solid and Drift Edition), Chipping Norton, 1:63,360 scale.

* 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.

* Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 scale and accompanying legend. Bulletin 15, Soils of South East England (1984).

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1 : Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 : Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 : Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a : Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b : Moderate Quality Agricultural Land

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

Grade 4 : Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (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 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 including: housing, industry, commerce, education, transport, religous buildings, cemetries. 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. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[1]The number of days specified is not necessarily a continuous period.
[2]'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 computer database. This uses notations and abbreviations as set out below.

Boring Header Information

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

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

ARA : Arable	**WHT** : Wheat	**BAR** : Barley
CER : Cereals	**OAT** : Oats	**MZE** : Maize
OSR : Oilseed rape	**BEN** : Field Beans	**BRA** : Brassicae
POT : Potatoes	**SBT** : Sugar Beet	**FCD** : Fodder Crops
LIN : Linseed	**FRT** : Soft and Top Fruit	**FLW** : Fallow
PGR : Permanent Pasture	**LEY** : Ley Grass	**RGR** : Rough Grazing
SCR : Scrub	**CFW** : Coniferous Woodland	**DCW** : Deciduous Wood
HTH : Heathland	**BOG** : Bog or Marsh	**FLW** : Fallow
PLO : Ploughed	**SAS** : Set aside	**OTH** : Other
HRT : Horticultural Crops		

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

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

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

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

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

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

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

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

OC : Overall Climate	**AE** : Aspect	**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** : Erosion Risk	**WD** : 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
ZL :	Silt Loam	**SCL** :	Sandy Clay Loam	**C** :	Clay
SC :	Sandy Clay	**ZC** :	Silty Clay	**OL** :	Organic Loam
P :	Peat	**SP** :	Sandy Peat	**LP** :	Loamy Peat
PL :	Peaty Loam	**PS** :	Peaty Sand	**MZ** :	Marine Light Silts

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

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

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

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

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

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

4. **MOTTLE CONT** : Mottle contrast

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

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

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

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

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

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

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

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

9. **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

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

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

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropiate horizon.

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

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

15. Other notations
APW : available water capacity (in mm) adjusted for wheat
APP : available water capacity (in mm) adjusted for potatoes
MBW : moisture balance, wheat
MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : WEST OXON LP: SITE 559 Pit Number : 1P

Grid Reference: SP43642545 Average Annual Rainfall : 706 mm
Accumulated Temperature : 1369 degree days
Field Capacity Level : 154 days
Land Use : Ley
Slope and Aspect : 03 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 27	HCL	10YR42 00	12	18	HR					Y
27- 50	HR	10YR54 00	0	0					P	Y

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

Drought Grade : 4 APW : 043mm MBW : -54 mm
APP : 043mm MBP : -42 mm

FINAL ALC GRADE : 4
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WEST OXON LP: SITE 559 Pit Number : 2P

Grid Reference: SP43602550 Average Annual Rainfall : 706 mm
Accumulated Temperature : 1369 degree days
Field Capacity Level : 154 days
Land Use : Ley
Slope and Aspect : 03 degrees NW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	HCL	10YR42 00	3	6	HR					Y
28- 50	C	10YR54 00	0	15	HR		MDCSAB	FM	M	Y
50- 70	C	25Y 64 00	0	50	HR	F			P	Y

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

Drought Grade : 3A APW : 085mm MBW : -12 mm
APP : 092mm MBP : 7 mm

FINAL ALC GRADE : 3A
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	SP43602550	LEY	NW	04			1	2	088	-9	098	13	3A				DR	3A		IMP70 AS 2P
1P	SP43642545	LEY	N	03			1	2	043	-54	043	-42	4				DR	4		PIT IMP 50
1Q	SP43642545	LEY	N	03			1	2	046	-51	045	-40	4				DR	4		DR 1P TO 120
2	SP43702550	LEY	N	03			1	2	042	-55	042	-43	4				DR	4		IMP32 AS1P
2P	SP43602550	LEY	NW	03			1	2	085	-12	092	7	3A				DR	3A		PIT IMP 70
2Q	SP43602550	LEY	NW	03			1	2	104	7	092	7	2				DR	2		DR 2P TO 120
3	SP43602540	LEY	N	03			1	2	076	-21	081	-4	3B				DR	3A		IMP60 AS2P
4	SP43702540	LEY	N	02			1	2	082	-15	072	-13	3A				DR	3A		IMP110
5	SP43782542	LEY	N	02			1	2	104	7	113	28	2				DR	2		IMP80
6	SP43562553	LEY	NW	02			1	2	113	16	097	12	2				DR	2		
7	SP43672553	LEY	N	03			1	2	100	3	090	5	3A				DR	3A		
8	SP43702546	LEY	N	03			1	2	071	-26	073	-12	3B				DR	3A		IMP60 AS2P

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-28	hcl	10YR42 00						0	0	HR	6					Y		
	28-36	c	10YR43 00						0	0	HR	20		M			Y		
	36-50	c	10YR54 00						0	0	HR	10		M			Y		
	50-70	c	10YR54 00						0	0	HR	40		M			Y		IMP 70-LIMESTONES
1P	0-27	hcl	10YR42 00						12	0	HR	18					Y		
	27-50	hr	10YR54 00						0	0		0		P			Y		IMP 50-LIMESTONES
1Q	0-27	hcl	10YR42 00						12	0	HR	18					Y		
	27-120	hr	10YR54 00						0	0		0		P			Y		1P TAKEN TO 120
2	0-28	hcl	10YR42 00						0	0	HR	18					Y		
	28-32	hr	10YR72 00						0	0		0		P			Y		IMP 32-LIMESTONES
2P	0-28	hcl	10YR42 00						3	0	HR	6					Y		
	28-50	c	10YR54 00						0	0	HR	15	MDCSAB FM	M			Y		
	50-70	c	25Y 64 00	10YR56 00	F				0	0	HR	50		P			Y		IMP 70-LIMESTONES
2Q	0-28	hcl	10YR42 00						3	0	HR	6					Y		
	28-50	c	10YR54 00						0	0	HR	15	MDCSAB FM	M			Y		
	50-120	c	25Y 64 00	10YR56 00	F				0	0	HR	50		P			Y		2P TAKEN TO 120
3	0-25	hcl	10YR42 00						0	0	HR	5					Y		
	25-35	c	10YR43 00						0	0	HR	20		M			Y		
	35-60	c	10YR43 44						0	0	HR	40		M			Y		IMP 60-LIMESTONES
4	0-25	hcl	10YR42 00						0	0	HR	6					Y		
	25-35	c	10YR43 00						0	0	HR	25		M			Y		
	35-45	c	10YR43 00						0	0	HR	50		P			Y		
	45-110	slst	25Y 74 00						0	0		0		P			Y		IMP 110
5	0-29	hcl	10YR42 00						0	0	HR	2					Y		
	29-67	c	10YR54 00						0	0	HR	2		M					
	67-80	c	10YR43 00						0	0	SLST	60		P			Y		IMP 80
6	0-28	hcl	10YR42 00						0	0	HR	5					Y		
	28-45	c	10YR43 00						0	0	HR	20		M			Y		
	45-120	c	10YR43 00						0	0	HR	35		M			Y		
7	0-28	hcl	10YR42 00						0	0	HR	5					Y		
	28-45	c	10YR74 00						0	0	SLST	60		P			Y		
	45-75	c	10YR43 00						0	0	HR	30		M			Y		
	75-120	hcl	10YR74 00						0	0	SLST	70		P			Y		
8	0-28	hcl	10YR42 00						0	0	HR	5					Y		
	28-50	c	10YR74 00						0	0	SLST	50		P			Y		
	50-60	hcl	10YR74 00						0	0	SLST	70		P			Y		IMP 60