A2

Land at Broughton Barn, Moulsoe, Bucks
Proposed Sand and Gravel Extraction.

Statement of Physical Characteristics
Map and Report

August 1997

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 0304/104/97
FRCA Reference: EL 03/01196

STATEMENT OF PHYSICAL CHARACTERISTICS

BROUGHTON BARN, MOULSOE, BUCKS

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) and assessment of site physical characteristics on 14.5 hectares of land at Broughton Barn, south of Moulsoe in Buckinghamshire. The survey was carried out during August 1997.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with proposals for sand and gravel extraction and subsequent landfill for restoration to agricultural use. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey, the agricultural land on this site comprised cereal stubble. The area mapped as 'Other Land' comprises a dwelling and farm buildings.

SUMMARY

5. The land classification of the survey area is shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% surveyed area	% site area
3a	6.9	47.9	47.6
3b	7.5	52.1	51.7
Other land	0.1	N/A	0.7
Total surveyed area	14.4	100	99.3
Total site area	14.5	-	100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of slightly more than 1 boring per hectare of agricultural land. A total of 16 borings and 2 soil pits were described.

8. The agricultural land at this site has been classified as Subgrade 3a (good quality) and Subgrade 3b (moderate quality) land. The soils are principally derived from an underlying geology of first level river terrace deposits. The key limitation to agricultural land quality is soil droughtiness due to stony subsoil horizons, often in combination with coarse soil textures. The land mapped as Subgrade 3a is less droughty than that shown as Subgrade 3b, the main difference being a greater depth over the very stony lower subsoil horizons.

FACTORS INFLUENCING ALC GRADE

Climate

9. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

10. The key climatic variables used for grading this site are given in Table 2, overleaf. These were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

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

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SP 909 405	SP 909 407
Altitude	m, AOD	68	65
Accumulated Temperature	day°C (Jan-June)	1411	1415
Average Annual Rainfall	mm	617	616
Field Capacity Days	days	124	124
Moisture Deficit, Wheat	mm	111	111
Moisture Deficit, Potatoes	mm	104	105
Overall climatic grade	N/A	Grade 1	Grade 1

13. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Other local climatic factors such as exposure and frost risk are not believed to have a significant adverse affect on the site. The site is climatically Grade 1.

Site

14. The site lies at altitudes between about 65 and 68m AOD and falls gently in a westerly direction from the higher ground along the eastern boundary towards the valley feature to the west. Nowhere on the site are gradient or microrelief a limitation in terms of agricultural land quality.

Geology and soils

15. The published geological information for the site (BGS, 1971) shows it to be underlain by first level river terrace drift deposits (probably overlying Oxford Clay), with Oxford Clay itself mapped towards the extreme east of the site.

16. The most detailed published soils information for the site (SSEW, 1983) shows soils of the Bishampton 2 soil association, with the possibility of the Evesham 2 association to the east (related to the Oxford Clay deposits) and the Fladbury 1 association on the lower lying alluvial areas outside of the site to the west. The Bishampton soils are described as comprising 'Deep fine loamy and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar slowly permeable seasonally waterlogged soils.' (SSEW, 1983). The soils encountered during field survey work were generally coarser textured and better drained than this generalised description would suggest, consistent with some of the locally important coarser textured soil series included within this soil association. (SSEW, 1984).

AGRICULTURAL LAND CLASSIFICATION

17. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

18. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Subgrade 3a

19. Land of good quality has been mapped to the west of the site. Soils in this area comprise non calcareous, very slightly stony, medium sandy loam and sandy clay loam topsoils, typically with less than 5% total flints by volume. These overlie similar textured, slightly stony upper subsoils containing up to about 15% flints by volume. The upper subsoils rest on impenetrable (to the soil auger) very stony lower subsoils at between 50 and 70cm depth. Soil pits 1 and 2 (see Appendix II) were dug to investigate the nature of these impenetrable horizons. The two pits revealed a marked increase in stone content where the soils become impenetrable to the soil auger, typically in the range 30-50 % flints (by volume). These stony lower horizons exhibited considerable variation in soil texture, including medium sands, medium sandy loams and sandy clays. Nearly all profiles were judged to be permeable and well drained (wetness class I), although occasional gleying in some profiles suggests evidence for fluctuating groundwater levels. Moisture balance calculations indicate that the soils have a moderate drought risk and are appropriately placed in this subgrade because available soil moisture is likely to be insufficient to fully meet crop requirements. This is due

to a combination of the soil textures and the high volumes of flints in the lower soil horizons. Nevertheless these are workable soils which are suited to a range of agricultural uses.

Subgrade 3b

20. Land of moderate quality has been mapped over the remaining agricultural land at this site. The soils are very similar to those described for the Subgrade 3a mapping unit above, but the Subgrade 3b areas tend to have upper subsoils which are stonier (up to 20-25% total flints by volume) and have the impenetrable stony horizons occurring higher in the profile (i.e. within about 50cm of the surface). Again these soils are permeable and generally well drained (wetness class I). The key limitation is one of soil droughtiness; this is more severe than for land in the Subgrade 3a mapping unit since there is a comparative reduction in the available water capacity due to the higher stone contents within the upper subsoil layers and the presence of the very stony horizons higher in the soil profile. This increase in droughtiness will result in lower and less consistent crop yields.

SOIL RESOURCES

Soil Units: Consideration for Restoration

21. The following section describes topsoil and subsoil resources on the site. It should be emphasised that this is not a soil stripping plan, but an illustration of the soil resources available for restoration on the site. Due to the natural variability of soils, the depths and volumes of topsoil and subsoil units given in Table 3 should be treated with caution. In general terms, all the available existing topsoil and subsoil resources should be retained for restoration purposes. When considering these details, it is important to remember that soils were sampled to a maximum depth of 120cm during survey work. It is possible that soil resources will extend below this depth in some cases.

Topsoils

22. Topsoils are texturally quite similar across the whole site, comprising dark brown or dark greyish brown (10YR4/2, 10YR4/3, 10YR3/2) medium sandy loams or sandy clay loams with an average depth of 30cm (range, 28-33cm). These were non-calcareous and very slightly to slightly stony (1-3% flints > 2 cm; 5-7% total flints by volume). Where described, (see 1P and 2P) the topsoil comprised weakly to moderately developed medium and coarse sub-angular blocky peds of friable consistence.

Upper Subsoils

23. Upper subsoils are again texturally similar across the site, comprising mainly medium sandy loams but with some sandy clay loam variants. Colours are more variable but typically dark brown, dark yellowish brown, or brown (10YR4/3, 10YR 4/4, 10YR3/4, 10YR5/3). This horizon has an average depth of 21cm (range 8-40cm) and has a range of stone contents from around 3% to 25% total flints by volume. Where described, (see 1P and 2P) upper subsoil structures were assessed as either weakly developed coarse subangular blocky or moderately developed coarse subangular blocky, with peds of friable consistence.

Lower Subsoils

24. These were impenetrable to the soil auger and were investigated by digging two soil pits. The reason for the resistance to the soil auger was the presence of large quantities of flints, estimated to comprise a total of between 30% and 50% by volume. Texturally this lower horizon was variable, with both clayey and sandy textures recorded (sandy clay, medium, sandy loam and medium sand). From the pit evidence (see 1P and 2P), soil colours appear redder than the upper horizons with strong brown colours (7.5YR4/6, 7.5YR5/6) dominating, particularly at depth. This lower flinty horizon has an average depth of 69cm (range 50-82cm). The soil structure was difficult to describe due to the high flint content; where this was possible the medium sandy loams comprised moderately developed coarse subangular blocky peds, whilst the medium sands comprised weakly developed coarse angular blocky peds, both structural types having peds of friable consistence.

Table 3: Soil Resource Data

Unit	Average Depth(cm)	Typical Textures	Area (ha)	Volume (m^3)
Topsoil	30	MSL, SCL	14.4	43,200
Upper Subsoil	21	MSL, SCL	14.4	30,240
Lower Subsoil	69	variable SC, MSL, MS	14.4	99,360
Total Soil Resource	120		14.4	172,800

Julie Holloway
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

British Geological Survey (1971) *Sheet No. SP 83. Milton Keynes. Solid and Drift Edition. 1:25 000 scale.*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Soils of South East England. 1:250 000 Scale.*
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils of South East England. Bulletin No. 15.*
SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

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

Grade 2: Very Good Quality Agricultural Land

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

Grade 3: Good to Moderate Quality Land

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

Subgrade 3a: Good Quality Agricultural Land

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

Subgrade 3b: Moderate Quality Agricultural Land

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

Grade 4: Poor Quality Agricultural Land

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

Grade 5: Very Poor Quality Agricultural Land

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

APPENDIX II

SOIL DATA

Contents:

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

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

Boring Header Information

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

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

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

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

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

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

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

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

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

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

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

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

Soil Pits and Auger Borings

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

L: loose **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 appropriate horizon.

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

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

15. Other notations:

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

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EXP	EROSN DIST	FROST LIMIT	CHEM	ALC	COMMENTS
1	SP90904070	STB	NW	1			1	1	59	-52	59	-46						DR	3B	imp 38cm
2	SP91004070	STB	NE	1			1	1	64	-47	64	-41						DR	3B	imp 42cm
3	SP90704060	STB	NW	1	37		2	2	86	-25	90	-15						DR	3A	imp 60cm
4	SP90804060	STB	N	1			1	1	75	-36	75	-30						DR	3A	imp 50cm
5	SP90904060	STB	N	1			1	1	74	-37	74	-31						DR	3A	imp 50cm
6	SP91004060	STB	NE	1			1	1	74	-37	74	-31						DR	3A	imp 50cm
7	SP90604050	STB	NW	1			1	1	70	-41	70	-35						DR	3B	imp 48cm
8	SP90704050	STB	NW	1			1	1	80	-31	82	-23						DR	3A	imp 60cm
9	SP90804050	STB					1	1	74	-37	74	-31						DR	3A	imp 50cm
10	SP90904050	STB	NE	1	28		2	2	60	-51	60	-45						DR	3B	imp 40cm
11	SP90504040	STB					1	1	79	-32	81	-24						DR	3A	imp 55cm
12	SP90604040	STB							62	-49	62	-43						DR	3B	imp 40cm
13	SP90704040	STB					1	1	73	-38	73	-32						DR	3B	imp 50cm
14	SP90604030	STB					1	1	67	-44	67	-38						DR	3B	imp 45cm
15	SP91104060	STB	NE	1	32		1	1	87	-24	92	-13						DR	3A	imp 65cm
16	SP90824067	STB	NW	2	30		2	2	93	-18	102	-3						DR	3A	imp 70cm
1P	SP90904060	STB		1			1	1	123	12	93	-12						DR	3A	pit80aug120
2P	SP90704050	STB	N	1			1	1	92	-19	83	-22						DR	3A	pit90aug120

COMPLETE LIST OF PROFILES 21/10/97 BOUGHTON BARN, MOULSOE

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-28	MSL	10YR42						2	0	HR	5						N	
	28-38	MSL	10YR43						0	0	HR	10		M					
2	0-34	MSL	10YR43	10YR46	C	D		S	0	0	HR	6					N	N	
	34-42	MSL	10YR44	10YR56	C	D		S	0	0	HR	25		M			N	N	
3	0-25	MCL	10YR42						2	0	HR	5						N	
	25-37	SCL	10YR43						0	0	HR	10		M				N	
	37-60	SCL	10YR53	75YR34	C	D		Y	0	0	HR	10		M				N	
4	0-32	MSL	10YR32						2	0	HR	5							
	32-50	MSL	10YR34						0	0	HR	15		M					
5	0-28	MSL	10YR42						2	0	HR	5						N	
	28-40	MSL	10YR42						0	0	HR	10		M				N	
	40-50	MSL	10YR54						0	0	HR	20		M				N	
6	0-33	SCL	10YR42						2	0	HR	5						N	
	33-40	SCL	10YR43						0	0	HR	10		M					
	40-50	MSL	10YR43						0	0	HR	25		M					
7	0-32	SCL	10YR43						0	0	HR	5						N	
	32-48	SCL	75YR44	75YR46	C	D		S	0	0	HR	25		M			N	N	
8	0-30	MSL	10YR42						2	0	HR	5							
	30-50	MSL	10YR43						0	0	HR	5		M					
	50-60	MS	10YR44						0	0	HR	25		M					
9	0-30	MSL	10YR42						2	0	HR	5						N	
	30-40	MSL	10YR43						0	0	HR	10		M				N	
	40-50	MSL	10YR44						0	0	HR	20		M				N	
10	0-28	SCL	10YR32						2	0	HR	5						N	heavy ts
	28-40	SCL	10YR53	75YR44	C	D		Y	0	0	HR	20		M			N	N	
11	0-35	MSL	10YR32						3	1	HR	7							
	35-43	MSL	10YR42						0	0	HR	10		M					
	43-55	MSL	10YR44						0	0	HR	20		M					
12	0-30	MSL	10YR42						2	0	HR	5						N	
	30-40	MSL	10YR43						0	0	HR	15		M				N	
13	0-28	MSL	10YR42						1	0	HR	5						N	
	28-35	MSL	10YR43						0	0	HR	10		M					
	35-50	MSL	10YR43						0	0	HR	20		M					
14	0-30	SCL	10YR42						2	1	HR	7						N	heavy ts
	30-38	SCL							0	0	HR	10		M					
	38-45	SCL	10YR44						0	0	HR	20		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
15	0-32	MSL	10YR42						0	0	HR	5						S
	32-42	MSL	10YR53	75YR46	C	D		Y	0	0	HR	10		M			N	N
	42-65	MSL	10YR63	75YR46	C	D		Y	0	0	HR	25		M			N	N
16	0-30	SCL	10YR42						1	0	HR	5						N
	30-55	SCL	25Y 42	75YR46	C	F		Y	0	0	HR	10		M			N	
	55-70	SC	10YR53	10YR56	M	F		Y	0	0	HR	15		M			N	N

				----MOTTLES-----			PED		----STONES----			STRUCT/	SUBS				
SAMPLE	DEPTH	TEXTURE	COLOUR	COL	ABUN	CONT	COL.	GLEY	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1P	0-34	MSL	10YR43						2	0	HR	5	WKMSAB	FR			N	PSD
	34-46	MSL	75YR43						0	0	HR	3	WKCSAB	FR	G		N	PSD
	46-68	MSL	10YR44						0	0	HR	35	MDCSAB	FR	M		N	PSD
	68-120	SC	75YR46						0	0	HR	30			M		N	DUG80AUG120
2P	0-34	MSL	10YR43						3	0	HR	6	MCSAB	FR			N	PSD
	34-50	MSL	75YR43						0	0	HR	15	MCSAB	FR	M		N	PSD
	50-80	MS	75YR46						0	0	HR	35	WKCAB	FR	G		N	PSD
	80-120	MS	75YR56						0	0	HR	50			M		M	DUG90AUG120