

***AGRICULTURAL LAND CLASSIFICATION
&
LAND LOSS MITIGATION STATEMENT***

Russell Homes

**Land at Mold Road and Stansty Chain Road
Wrexham**

REVISION 3
(10/12/2019)



Our Ref: SES/RH/MRSCR/#1

Date: 22nd July 2019

Client:

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&
LAND LOSS MITIGATION STATEMENT***

**Land at Mold Road and Stansty Chain Road
Wrexham**

A report prepared on behalf of ***Soil Environment Services*** by:



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CONTENTS

	Page
1. INTRODUCTION	4
2. METHODOLOGY	5
3. BASELINE CONDITIONS	6
3.1. Climate and flooding	6
3.2. Soils, geology and topography	6
4. FIELDWORK RESULTS	8
4.1. Description of soil types	8
4.2. Field study photographs	9
4.3. In-field wetness class assessment	10
5. AGRICULTURAL LAND CLASSIFICATION (ALC)	11
5.1. National 1:250 000 map and previous report ALC grading	11
5.2. Current ALC grading	11
6. LAND LOSS MITIGATION STATEMENT	13
5.1. Impact of loss in relation to ALC grades in the Borough	13
5.2. Impact of loss on the current farm enterprise	13

DRAWINGS

ALC/1	Soil Types and Boring Locations
ALC/2	ALC Grade

APPENDIX A	Climatological data for agricultural land classification
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APPENDIX B	Survey profile data sheet
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INFORMATION SOURCES

1. INTRODUCTION

An Agricultural Land Classification (ALC)¹ has been carried out on 21 ha of land located at Mold Road and Stansty Chain Road, Wrexham (Drawing ALC/1). The site is centred on OS Grid Ref. 332486, 352028.

Agricultural land is classified into the following grades according to the 1988 guidelines¹.

Grade	Description
1	Excellent quality agricultural land with no or very minor limitations to agricultural use.
2	Very good quality agricultural land with minor limitations which affect crop yield, cultivation or harvesting.
3a	Good quality agricultural land capable of producing moderate to high yields of a narrow range of arable crops or moderate yields of a wider range of crops.
3b	Moderate quality agricultural land capable of producing moderate yields of a narrow range of crops or lower yields of a wider range of crops.
4	Poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields.
5	Very poor quality agricultural land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

The survey was conducted on the 11th July 2019 and classifies the land into one or more of the above grades.

On the survey date the site was in recently cut grass.

2. METHODOLOGY

The classification includes an initial desktop investigation to examine previously mapped soil types and to note the drift and solid geology. This included consultation from:

Soil Survey of England and Wales 1:250 000⁴
British Geological Survey 1:50 000 solid and drift map⁸

ALC 021-93 – Lower Stansty & Stansty Lodge Newport – short report
(supplied on the 29th November 2019)
NB Full data set not available.

The field survey consisted of hand auger borings to a depth of 1.2 m (where possible) to examine soil profiles on a 100 m grid (1 boring per hectare) using standard soil survey methods². Pit excavations were conducted to determine sub soil structure where necessary. This data was used to map the principal soil types for determining the ALC. The soil removed during augering and pit excavations was examined in accordance with:

Soil Survey Field Handbook²
Describing and Sampling Soil Profiles
Soil Survey of England and Wales, Technical Monograph No. 5, 1976

Soil Classification for Soil Survey⁹
Monographs on Soil Survey
Butler, B E (1980) Clarendon Press, Oxford

Climatological data³ was used to determine the overriding site limitation and for interaction with soil parameters (Appendix A). The above information was cross referenced with geological surveys⁸, previous soil surveys¹⁰ and the national 1:250 000 series ALC survey⁴ relevant for this site to substantiate the findings. The ALC grade was then determined for this site and for the current survey and is detailed in Drawing ALC/1.

3. BASELINE CONDITIONS

3.1. Climate and flooding

The climatological data (Table 1) indicates slightly below average temperature, slightly above average rainfall and an average number of field capacity days for the region.

Table 1		
Climatological information³		
Factor	Units	Value
Altitude AOD	m	89
Accumulated temperature	day°C (Jan-June)	1375.2
Average Annual Rainfall	mm	819.4
Field Capacity Days	days	188.5
Moisture Deficit Wheat	mm	91.4
Moisture Deficit Potatoes	mm	78.3

The site is not mapped within a flood risk area⁷.

3.2. Soils, geology and topography

3.2.1. Soils

The north of the site has previously been mapped as having soils of the *Wick 1 Association*^{4,5}.

The previous detailed survey found subsoil stone contents over 70% in places. Detailed information is not available however.

Two general soil types were noted for the purposes of ALC grading.

This study has identified the soils to be sandy silt loams over loamy sands and gravels or sandy silt loams over sandy loams to depth.

3.2.2. Geology⁸

Superficial Geology

Majority of the site:

1:50 000 scale superficial deposits description: *Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (UGF).*

East of the site:

1:50 000 scale superficial deposits description: *Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (U).*

Bedrock Geology

Majority of the site:

1:50 000 scale bedrock geology description: *Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 310 to 319 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas.*

North West of the site:

1:50 000 scale bedrock geology description: *Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone. Sedimentary Bedrock formed approximately 310 to 319 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas.*

3.2.3. Topography

The slope measured on site was a maximum of 3° and hence gradient will not limit the ALC Grade for the site.

No significant variation in microrelief was noted on the site.

4. FIELDWORK RESULTS

4.1. Descriptions of soil types

The soils across the site were noted as sandy silt loams over loamy sands and gravels or sandy silt loams over sandy loams to depth. Full profile data is listed in Appendix B.

A summary of the features of the soil type/s are listed in Table 2 and locations are shown within Drawing ALC/1.

Table 2. Soil Type descriptions			
Profile Description	Soil types		
	Type 1	Type 2	
Horizon 1 (topsoil)	0-30 cm Very dark greyish brown (10YR 3/2) very slightly stony medium sandy silt loam, no mottles; friable weak fine subangular blocky structure.	0-30 cm Very dark greyish brown (10YR 3/2) very slightly stony medium sandy silt loam, no mottles; friable weak fine subangular blocky structure.	
Horizon 2 (subsoil 1)	30-48 cm Dark greyish brown (10YR 4/2) slightly stony medium sandy silt loam, no mottles; friable moderate medium subangular blocky structure.	30-50 cm Dark greyish brown (10YR 4/2) slightly stony medium sandy silt loam, no mottles; friable moderate medium subangular blocky structure.	
Horizon 3 (subsoil 2)	~48-120 cm Brown (10YR 4/3) slightly to extremely stony medium sandy loam, no mottles; single grain structure.	50-120 cm Greyish brown (10YR 5/2) very slightly stony medium sandy loam, few fine ochreous mottles; firm moderate medium subangular blocky structure.	
Survey points (Drawing ALC/1) and soil types: Borings/ Trial Pits Type 1 soil = 2, 5, 6, 10, 11, 13, 14, 15, 17-23 Type 2 soil = 1, 3, 4, 7, 8, 9, 12, 16 Notes:			

4.2. Field study photographs

Photo 1. Boring location 14 – Profile of Soil Type 1



Photo 1. Boring location 9 – Profile of Soil Type 2



NB Photographs of auger borings are included for an illustration of horizons, to verify profile depth and provide an indication of colour but are not intended to verify any structure.

4.3. In-field wetness class assessment

An in-field wetness assessment was conducted for the soil types (Table 3).

Table 3. In-field Wetness Class Assessment					
Soil Type	Feature	Parameters	Findings	WC	
1	Site conditions	Undisturbed/ disturbed	Undisturbed	I	
		FCD	188.5		
	Potential Slowly Permeable Layer (SPL)	Horizon depth (cm)	48-50		
		Texture	MSL		
		Structure	SG		
		Biopores > 0.5 mm (%)	> 0.5		
		Evidence of wetness	No Mottles		
	Potential Gleyed Horizon	Matrix colour	Brownish – 10YR 4/3		
		Ped faces colour	Brownish – 10YR 4/3		
		Mottles	None		
		Depth to gleying (cm)	>50 cm		
	Reference in ALC guidelines – Figure 6				
2	Site conditions	Undisturbed/ disturbed	Undisturbed	I	
		FCD	188.5		
	Potential Slowly Permeable Layer (SPL)	Horizon depth (cm)	50-120		
		Texture	MSL		
		Structure	FMMSAB		
		Biopores > 0.5 mm (%)	> 0.5		
		Evidence of wetness	Mottles		
	Potential Gleyed Horizon	Matrix colour	Greyish – 10YR 5/2		
		Ped faces colour	Greyish – 10YR 5/2		
		Mottles	Ochreous – 10YR 5/6		
		Depth to gleying (cm)	50		
	Reference in ALC guidelines – Table 13				
	Gleyed within 70 cm but not within 40 cm; coarse textured subsoil				
Key					
FCD – Field Capacity Days		WC – Wetness Class			
LS – Loamy Sand		SG – Single Grain			
SL – Sandy Loam		FMMSAB – Firm Moderate Medium Subangular Blocky			
Notes:					

5. AGRICULTURAL LAND CLASSIFICATION

5.1. National 1:250 000 map grading and previous detailed report findings.

Grading on the Predictive ALC Map⁶ indicates **ALC Grade 2** across the site. The previous detailed report (ALC 021-93 – Lower Stansty & Stansty Lodge Newport – short report) found Grades 2 and 3 across the survey area.

5.2. Current grading

This survey has resulted in an Agricultural Land Classification of the grades in Table 4 (Drawing ALC/1) and these now concur with the grades found during the previous detailed report.

Table 4. ALC gradings and limitations			
Grade	Area		Limitation
1	3.5 ha	28.1%	Soil Type 2 – No Limitation
2	12.6 ha	48.6%	Soil Type 1 – Droughtiness Limitation
3a	4.9 ha	23.3%	Soil Type 1 – Droughtiness Limitation
3b			
4			
5			
Non-agricultural land			
Total	21 ha	100%	

Type 1 Soils – Droughtiness Limitation

The combination of the profile texture, stoniness, depths and climatic factors results in ALC Grade 2 for Type 1 soils with subsoil stone contents* up to 70% and Grade 3a with subsoil stone contents at or over 70%.

NB

- 1 The high subsoil stone content for the Grade 3a area is presumed from the previous detailed ALC report.
- 2 Locations 7, 12 and 16 have been given a Grade 2 as per the previous detailed report.

Type 2 Soils – No Limitation

No limitations results in **ALC Grade 1** for Type 2 soils to the north east of Stansty Road.

*Appendix 4 of the 1988 ALC guidance states:

The values for TAv and EAv given in Table 14 are for the fine earth fraction of soils (material less than 2 mm in diameter) and adjustments are therefore necessary to take into account the presence of stones in soil layers. Such adjustments are only made for layers with less than 70% stones by volume and further modification of AP is necessary where gravelly layers (defined as containing at least 70% rounded stones by volume) or massive, fissured or shattered rock material (defined as having at least 70% angular stones by volume) occur within the model rooting depths.

Where the soil has a severely compacted layer with very poor structure which generally restricts root penetration, soil available water is calculated only for layers above the compacted layer.

For the droughtiness calculations in this report, the gravel only fraction has now been used for locations with stone contents over 70%.

6. LAND LOSS MITIGATION STATEMENT

6.1. Impact of loss in relation to ALC grades in the Borough

Approximate area of different ALC grades in the Borough

BMV - Grade 1, Grade 2, Grade 3a 16966 hectares

Non BMV - Grade 3b, Grade 4, Grade 5 30034 hectares

2707 hectares of Grade 1 in the Borough.

2160 hectares of Grade 2 around Wrexham in which the development area is located.

The site is located within a zone around Wrexham which is mainly Grade 2 with some Grade 1 land and this development represents results a loss of less than 1% of this area.

Within the Borough, which has a considerable amount of BMV land, the development site represents a loss of just over 0.1 % of this land.

On this basis the impact on agricultural land could be considered as LOW.

6.2. Impact of loss on the current farm enterprise

The main focus of the business is wholesale and retail butchery; the farming is a 'side-line' which will be only minimally impacted by the loss of the development land. The enterprise currently also buys in hay and haylage and this is adjusted by either increasing the amount bought in or land area rented.

Areas

The enterprise owns and farms:

16.6 hectares at Stansty

33.3 hectares at Summerhill

2.1 hectares at Rhosllanerchrugog

Hay is cut from a further 6.3 hectares owned by a nearby landowner

15.8 hectares is rented in Llay

Yields

Stansty :

180 medium square bales haylage

2,450 small bales hay

60 large round bales haylage

Nearby landowner's land yield:

2, 180 small bales hay

Summerhill:

741 medium square bales haylage

70 large round bales haylage

Rhosllanerchrugog:

20 large round bales hay

Llay:

387 medium square bales haylage

Therefore, as haylage can easily be either bought in or land rented, the loss of less than one third of the land being used can very easily be accommodated and the ultimate impact on the business will be low.

DRAWING ALC/1

Soil Types and Boring Locations

Key

- Soil Type 1
- Soil Type 2
- Boring Location

Soil Environment Services

Drawing Title: Soil Types and Boring Locations

Drawing No.: ALC/1

Scale: 1: 5905

Date: 11/07/2019



DRAWING ALC/2

ALC Grade

Key

- Excellent quality - 1
- Very good quality – 2
- Good quality – 3a
- Boring Location

Soil Environment Services

Drawing Title: ALC Grade

Drawing No.: ALC/2

Scale: 1: 5905

Date: 11/07/2019



APPENDIX A

Climatological data for
Agricultural Land Classification

APPENDIX B

Data and adjustment calculations from: The Met. Office, *Climatological Data for Agricultural Land Classification* 1989.
Input data in box cells only, results in shaded cells.

Site name	Land at Mold Road & Stansty Chain Road	
Site altitude =	89	m
Site GR	3324	3520

Meteorological information for surrounding national grid reference points

	Easting	Northing	ALT	AAR	LR_AAR	ATO	MDMWHT	MDMPOT	FCD
NW	3300	3550	112	903	0.8	1348	83	68	204
NE	3350	3550	61	751	1	1405	100	89	173
SW	3300	3500	137	880	0.9	1322	81	65	202
SE	3350	3500	65	754	1.1	1403	100	89	175

Altitude adjustment of surrounding meteorological information with respect to site.

Adjusted surrounding points

	AAR	ATO	FCD
NW	884.6	1374.2	201.3
NE	779.0	1373.1	177.0
SW	836.8	1376.7	195.8
SE	780.4	1375.6	178.8

Site adjusted meteorological information

	1 Dsg	2 Wg	Wp
NW	38.418745	0.000678	0.207443
NE	39.698866	0.000635	0.194281
SW	31.240999	0.001025	0.313716
SE	32.802439	0.000929	0.284560
Sum		0.003266	

Site	AAR	ATO	FCD
	819.4	1375.2	188.5

ALC according to climate

Grade	1
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Soil wetness class (drained)

Type 1	
Type 2	
Type 3	

ALC according to wetness/climate texture

Type 1	1
Type 2	1
Type 3	

Soil moisture deficit of surrounding points

Site results for soil moisture deficit

	Cw	Cp	Adjusted	
NW	7.9488	10.4544	88.9488	75.45
NE	-4.833	-6.3504	95.1672	82.65
SW	3.648	4.802	86.6478	72.80
SE	-4.3104	-5.6592	95.6896	83.34

MDMWŁ MDMPOT	
91.4	78.3

Adjustment data for stone type and content

[illegible]

Droughtiness (moisture balance) determination for each soil type and restored profile

Moisture availability data for each texture from MAFF ALC Guidelines 1988

Moisture Balance (MB) = AP - MD for wheat and potatoes (adjusted for stones)

Horizon		Type 1		Type 2		Type 3			
		texture	water	texture	water	texture	water		
TAvt - Topsoil water available (mm)		SZL	18.10	SZL	18.10	0	0.00		
LTt - Topsoil thickness (cm)		0	30.00	0	30.00	0	0.00		
TAvs - Subsoil total available	1	SZL	17.20	SZL	17.20	0	0.00		
	2	SL	1.00	SL	14.30	0	0.00		
	3	0	0.00	0	0.00	0	0.00		
	4	0	0.00	0	0.00	0	0.00		
EAvs - Subsoil (SS) easily available	1	SZL	11.75	SZL	11.75	0	0.00		
	2	SL	0.50	SL	10.48	0	0.00		
	3	0	0.00	0	0.00	0	0.00		
	4	0	0.00	0	0.00	0	0.00		
LT50 - Thickness ss layers to 50cm	1	SZL	18.00	SZL	20.00	0	0.00		
	2	SL	2.00	SL	0.00	0	0.00		
	3	0	0.00	0	0.00	0	0.00		
	4	0	0.00	0	0.00	0	0.00		
LT120 - Thickness ss layers 50 to 120cm	1	SZL	0.00	SZL	0.00	0	0.00		
	2	SL	70.00	SL	70.00	0	0.00		
	3	0	0.00	0	0.00	0	0.00		
	4	0	0.00	0	0.00	0	0.00		
LT0 - Thickness ss layers to 70cm	1	SZL	18.00	SZL	20.00	0	0.00		
	2	SL	2.00	SL	20.00	0	0.00		
	3	0	0.00	0	0.00	0	0.00		
	4	0	0.00	0	0.00	0	0.00		
Total profile thickness for soil type cm		0	120		120	0	0		

SOIL Droughtiness (moisture balance) results

Type 1

Grade

Results

AP wheat =	89.0		
Moisture balance wheat =	-2.4	3a	
AP potatoes =	88.7		
Moisture balance potatoes =	10.4	1	

Type 2

Results

AP wheat =	162.0		
Moisture balance wheat =	70.7	1	
AP potatoes =	123.1		
Moisture balance potatoes =	44.8	1	

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Notes

ALC Grade	Moisture Balance Limits	
	wheat	potatoes
1	30	10
2	5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

Data and adjustment calculations from: The Met. Office, *Climatological Data for Agricultural Land Classification* 1989.
Input data in box cells only, results in shaded cells.

Site name	Land at Mold Road & Stansty Chain Road	
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SE	3350	3500	65	754	1.1	1403	100	89	175

Altitude adjustment of surrounding meteorological information with respect to site.

Adjusted surrounding points

	AAR	ATO	FCD
NW	884.6	1374.2	201.3
NE	779.0	1373.1	177.0
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SE	780.4	1375.6	178.8

Site adjusted meteorological information

	1 Dsg	2 Wg	Wp
NW	38.418745	0.000678	0.207443
NE	39.698866	0.000635	0.194281
SW	31.240999	0.001025	0.313716
SE	32.802439	0.000929	0.284560
Sum		0.003266	

Site	AAR	ATO	FCD
	819.4	1375.2	188.5

ALC according to climate

Grade	1
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Soil wetness class (drained)

Type 1

Type 2	I
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Type 3	
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ALC according to wetness/climate texture

Type 1 

Type 2	1
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Type 3	
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Soil moisture deficit of surrounding points

Site results for soil moisture deficit

	Cw	Cp	Adjusted	
NW	7.9488	10.4544	88.9488	75.45
NE	-4.833	-6.3504	95.1672	82.65
SW	3.648	4.802	86.6478	72.80
SE	-4.3104	-5.6592	95.6896	83.34

MDMWŁ MDMPOT	
91.4	78.3

Adjustment data for stone type and content

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Droughtiness (moisture balance) determination for each soil type and restored profile

Moisture availability data for each texture from MAFF ALC Guidelines 1988

Moisture Balance (MB) = AP - MD for wheat and potatoes (adjusted for stones)

Horizon		Type 1		Type 2		Type 3	
		texture	water	texture	water	texture	water
TAvt - Topsoil water available (mm)		SZL	18.10	SZL	18.10	0	0.00
LTt - Topsoil thickness (cm)		0	30.00	0	30.00	0	0.00
TAvs - Subsoil total available	1	SZL	17.20	SZL	17.20	0	0.00
	2	SL	5.34	SL	14.30	0	0.00
	3	0	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
EAvs - Subsoil (SS) easily available	1	SZL	11.75	SZL	11.75	0	0.00
	2	SL	3.76	SL	10.48	0	0.00
	3	0	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT50 - Thickness ss layers to 50cm	1	SZL	18.00	SZL	20.00	0	0.00
	2	SL	2.00	SL	0.00	0	0.00
	3	0	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT120 - Thickness ss layers 50 to 120cm	1	SZL	0.00	SZL	0.00	0	0.00
	2	SL	70.00	SL	70.00	0	0.00
	3	0	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
LT0 - Thickness ss layers to 70cm	1	SZL	18.00	SZL	20.00	0	0.00
	2	SL	2.00	SL	20.00	0	0.00
	3	0	0.00	0	0.00	0	0.00
	4	0	0.00	0	0.00	0	0.00
Total profile thickness for soil type cm		0	120	120	0	0	

SOIL Droughtiness (moisture balance) results

Type 1

Grade

Results

AP wheat =	112.6
Moisture balance wheat =	21.3 2
AP potatoes =	88.7
Moisture balance potatoes =	10.4 1

Type 2

Results

AP wheat =	162.0
Moisture balance wheat =	70.7 1
AP potatoes =	123.1
Moisture balance potatoes =	44.8 1

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Notes

ALC Grade	Moisture Balance Limits	
	wheat	potatoes
1	30	10
2	5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

Site Survey Field Notes

NB Some borings terminated at ~50 cm depth a gravel is used in calculations below this depth.

ALC Survey Profile Data Sheet

Site: Land at Mold Road and Stansty Chain Road, Wrexham

Boring no.	Topsoil						Subsoil 1						Subsoil 2					
	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure	Depth (cm)	Texture	Colour (Munsell)	Stoniness (%)	Mottles	Structure
1	0-28	MSZL	10YR 3/2	5	No	FrWFSAB	28-52	MSZL	10YR 4/2	10	No	FrMMSAB	52-120	MSL	10YR 5/2	5	FFO	FMMSAB
2	0-30	MSZL	10YR 3/2	4	No	FrWFSAB	30-48	MSZL	10YR 4/2	11	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
3	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-50	MSZL	10YR 4/2	10	No	FrMMSAB	50-120	MSL	10YR 5/2	4	FFO	FMMSAB
4	0-25	MSZL	10YR 3/2	3	No	FrWFSAB	25-50	MSZL	10YR 4/2	10	No	FrMMSAB	50-120	MSL	10YR 5/2	5	FFO	FMMSAB
5	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	13	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
6	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
7	0-30	MSZL	10YR 3/2	6	No	FrWFSAB	30-50	MSZL	10YR 4/2	10	No	FrMMSAB	50-120	MSL	10YR 5/2	4	FFO	FMMSAB
8	0-28	MSZL	10YR 3/2	5	No	FrWFSAB	28-53	MSZL	10YR 4/2	14	No	FrMMSAB	53-120	MSL	10YR 5/2	5	FFO	FMMSAB
9	0-30	MSZL	10YR 3/2	7	No	FrWFSAB	30-50	MSZL	10YR 4/2	10	No	FrMMSAB	50-120	MSL	10YR 5/2	5	FFO	FMMSAB
10	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
11	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	31	No	FSG
12	0-30	MSZL	10YR 3/2	4	No	FrWFSAB	30-50	MSZL	10YR 4/2	9	No	FrMMSAB	50-120	MSL	10YR 5/2	5	FFO	FMMSAB
13	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-55	MSL	10YR 4/3	25	No	FSG
14	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
15	0-29	MSZL	10YR 3/2	2	No	FrWFSAB	29-48	MSZL	10YR 4/2	12	No	FrMMSAB	48-50	MSL	10YR 4/3	23	No	FSG
16	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-50	MSZL	10YR 4/2	11	No	FrMMSAB	50-120	MSL	10YR 5/2	3	FFO	FMMSAB
17	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
18	0-30	MSZL	10YR 3/2	3	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG
19	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	27	No	FSG
20	0-26	MSZL	10YR 3/2	5	No	FrWFSAB	26-45	MSZL	10YR 4/2	12	No	FrMMSAB	45-50	MSL	10YR 4/3	25	No	FSG
21	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-53	MSL	10YR 4/3	25	No	FSG
22	0-30	MSZL	10YR 3/2	6	No	FrWFSAB	30-48	MSZL	10YR 4/2	8	No	FrMMSAB	48-50	MSL	10YR 4/3	30	No	FSG
23	0-30	MSZL	10YR 3/2	5	No	FrWFSAB	30-48	MSZL	10YR 4/2	10	No	FrMMSAB	48-50	MSL	10YR 4/3	25	No	FSG

Key:

MSZL - Medium Sandy Silt Loam

MSL - Medium Sandy Loam

No - No Mottles

FFO - Few Fine Ochreous

FrWFSAB - Friable Weak Fine Subangular Blocky

FrMMSAB - Friable Moderate Medium Subangular Blocky

FMMSAB - Firm Moderate Medium Subangular Blocky

FSG - Firm Single Grain

INFORMATION SOURCES

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