SECTION

11 OF 20

G.6

FIELD DENSITY TESTING

FIELD DENSITY TEST (ASTM D-6938)

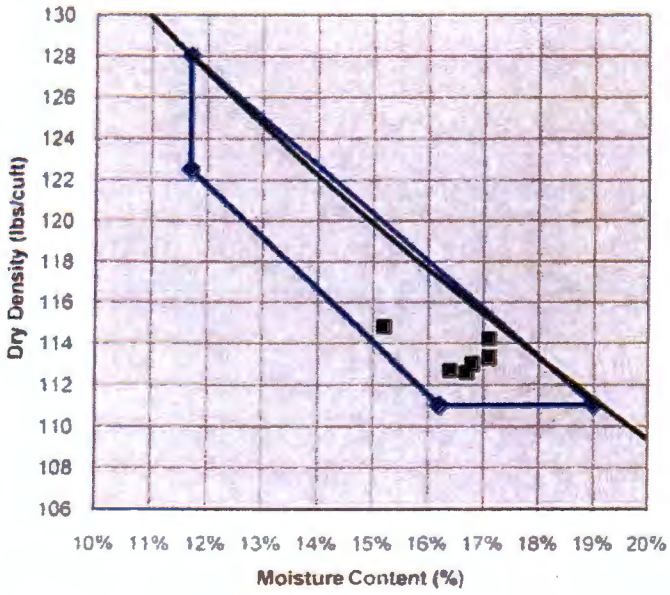
ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/7/2010	Moisture Std.	647	Density Std	2284
Description	Admix Soil	Offsets.	Moisture -	Density -	
Report	5-016-063	Acceptable Zone			

Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-01	1	9:15	3	113	16.8%	0.491	N/A	92.0%	M3	Pass
SL-02	1	9:20	3	113	16.4%	0.495	N/A	89.0%	M2	Pass
SL-03	1	10:47	3	114	17.1%	0.496	N/A	93.0%	M1	Pass
SL-04	2	14:20	3	113	17.1%	0.488	16.8%	95.0%	M3	Pass
SL-05	2	14:50	3	113	16.7%	0.497	N/A	91.0%	M2	Pass
SL-06	2	15:15	3	115	15.2%	0.474	N/A	87.0%	M1	Pass
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-01				
SL-02				
SL-03				
SL-04	SC	2191.30	1932.4	394.3
SL-05				
SL-06				



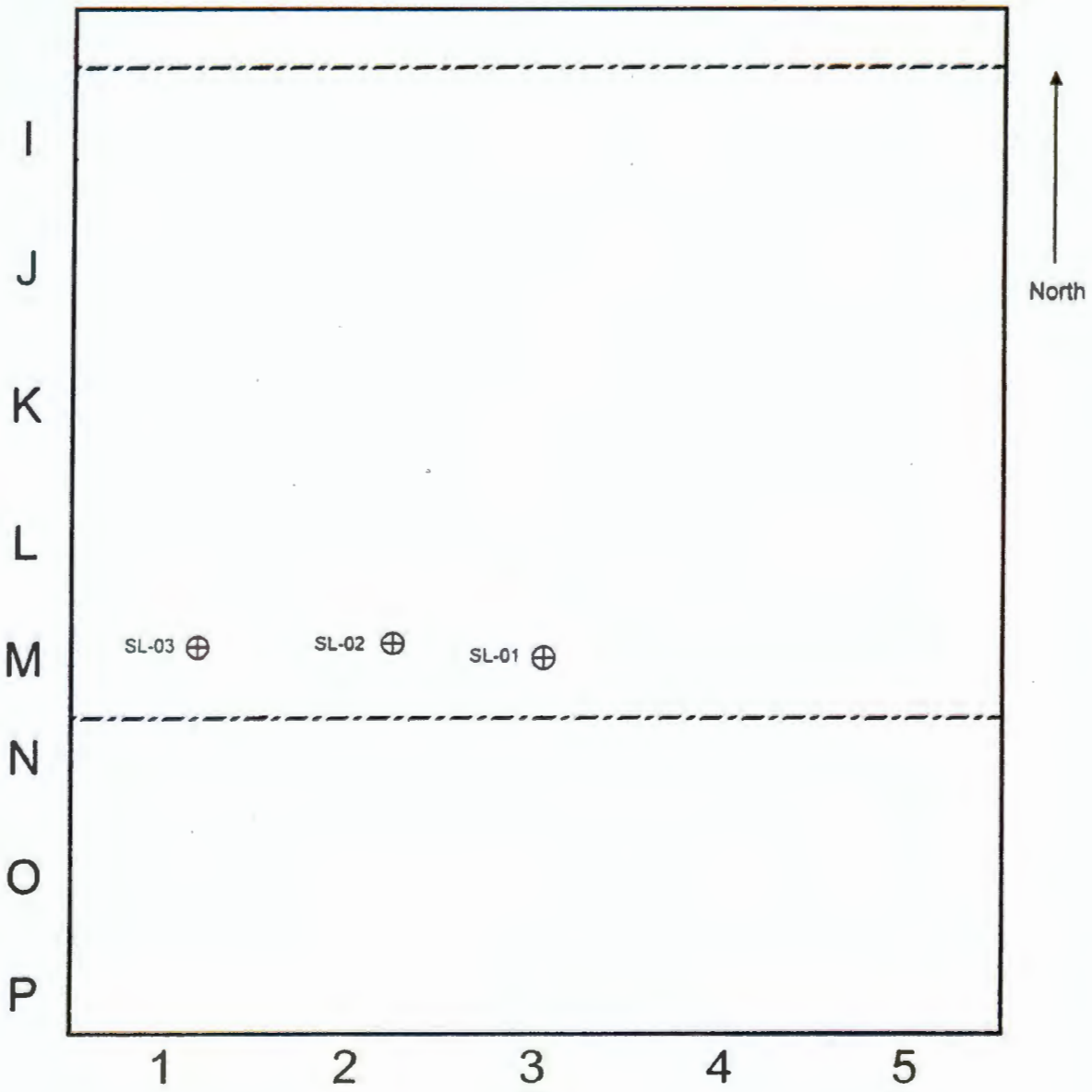
Envirotech Engineering & Consulting, Inc

5/10/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

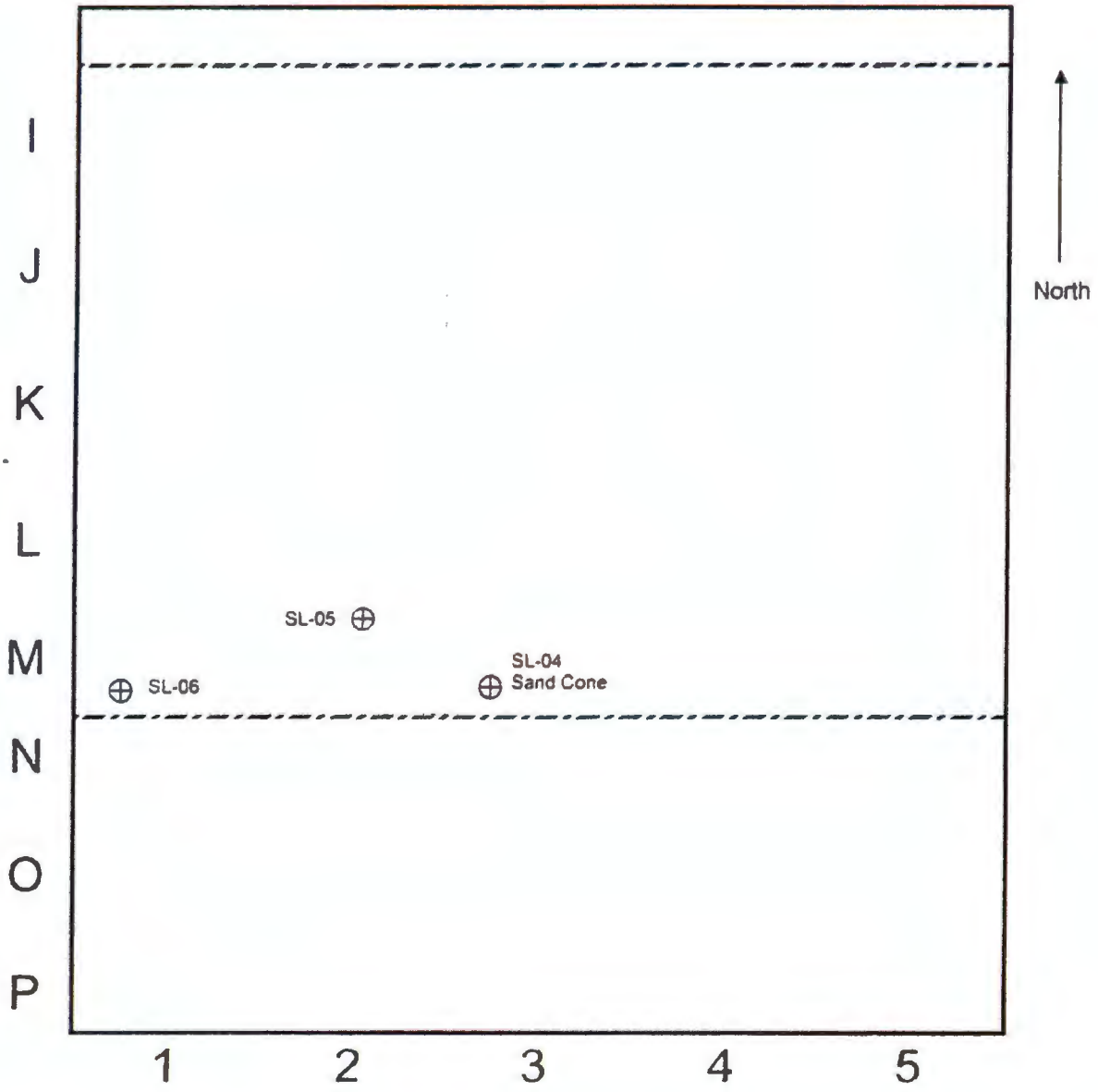
Date:	5/7/2010	Lift:	No. 1
Report:	5-016-063	Operator:	L. Hay
Map No:	1	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

Date	5/7/2010	Lift:	No 2
Report:	5-016-063	Operator:	L. Hay
Map No.	2	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580 234-8780 | Fax 580 237-4302

Client:	WCH
Submittal:	05-18G Admix Test Pad Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID	SL-04
Project:	S013213A00			Sample Description:	Admix Soil
Project Location	ERDF Cells 9-10			Sampling Date:	5/7/2010
Tested By:	L. Hay	Date	5/7/2010	Sampled By:	L. Hay
Reviewed By:	J. Voss	Date:	5/10/2010	Date Received	5/7/2010
Comments				Report No:	05-016-063

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1	Mass of Proctor mold, W_1	3956.60 g
2	Mass of Proctor mold + sand, W_2	5394.30 g
3	Volume of mold, V_1	0.03 ft
4	Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.09 lb/ft^3

Calibration Cone

5.	Mass of bottle + cone + sand (before use), W_3	3768.20 g
6	Mass of bottle + cone + sand (after use), W_4	2132.50 g
7	Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.61 lb

Results from Field Tests

8	Mass of bottle + cone + sand (before use), W_6	6027.0 g
9.	Mass of bottle + cone + sand (after use), W_8	3105.8 g
10	Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{d\,(sand)}$	0.0298 ft^3
11.	Mass of gallon can, W_5	394.30 g
12.	Mass of gallon can + moist soil, W_7	2191.30 g
13.	Mass of gallon can + dry soil, W_9	1932.40 g
14.	Moist unit weight of soil in field, $= W_7 - W_5 / V_2$	132.92 lb/ft^3
15	Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.8%
16	Dry unit weight in the field, $_{d\,(sand)} = \quad / \,(1+(w\,(\%)/100)$	113.77 lb/ft^3
17	Comparision moisture content =	17.1%
18	Dry unit weight comparison =	113.3 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

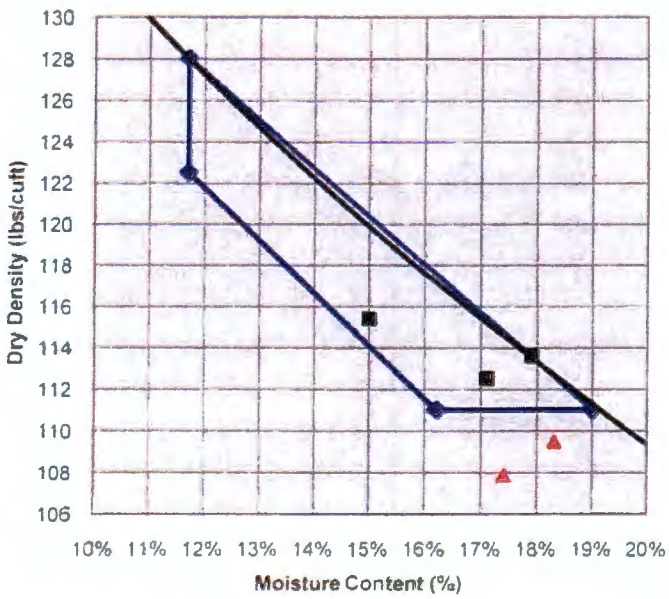
ENVIROTECH

Client: WCH
Submittal 05-18J Admix Field Data
Project: S013213A00
Test Date 5/10/2010
Description Admix Soil
Report: 5-016-064
Comments Unless otherwise stated - All test at taken at a depth of 6-in.

Model 3430 Troxler ID: 27881
Moisture Std: 640 Density Stc 2250
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-07	1	13:25	3	115.4	15.0%	0.461	N/A	88.0%	N3	Pass
SL-08	1	13:30	3	112.5	17.1%	0.499	N/A	93.0%	O3	Pass
SL-09	1	13:35	3	107.9	17.4%	0.562	N/A	84.0%	P3	Fail
SL-9A	2	13:37	3	109.5	18.3%	0.584	N/A	85.0%	P3	Fail
SL-9B	2	14:15	5	113.6	17.9%	0.545	N/A	89.0%	P3	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-07				
SL-08				
SL-09				
SL-9A				
SL-9B				



Envirotech Engineering & Consulting, Inc

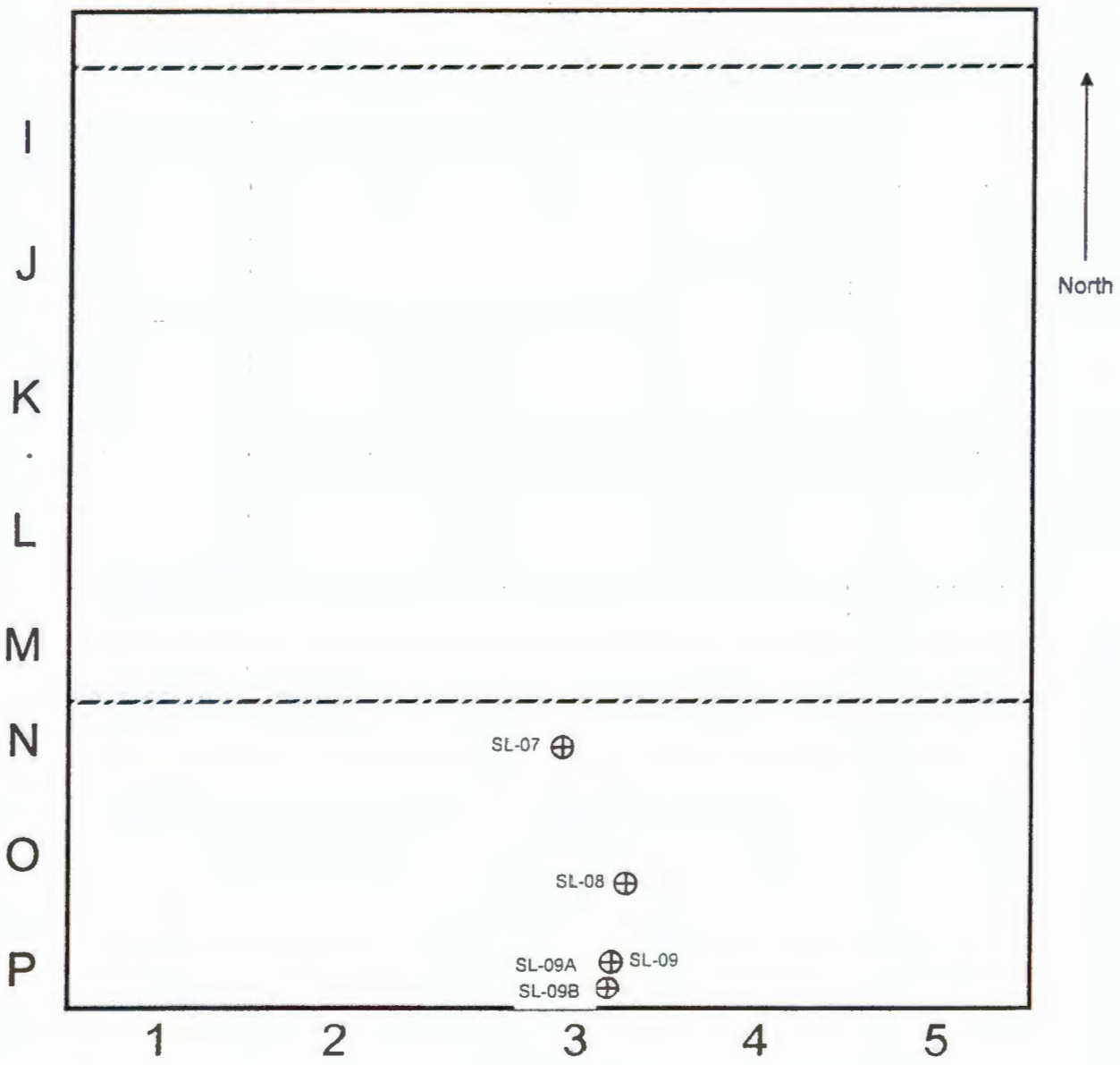
5-11-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

5-016-064

Date:	5/10/2010	Lift:	No. 1
Report:	5-016-064	Operator:	L. Hay
Map No:	1	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

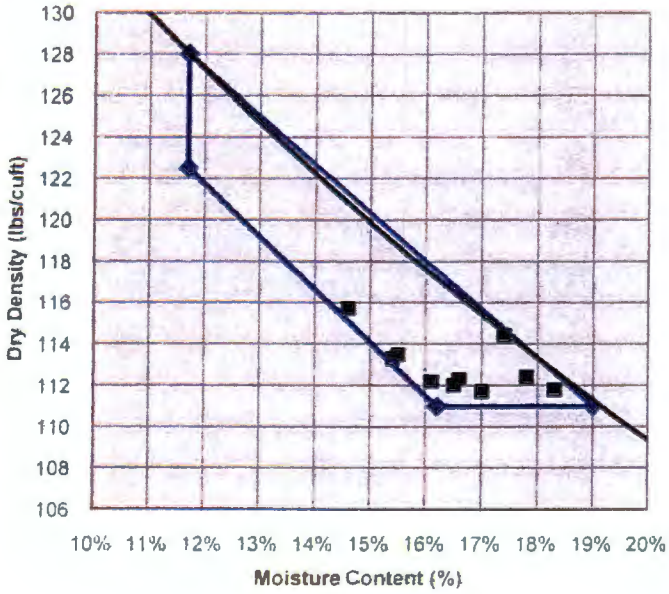
Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/11/2010
Description: Admix Soil
Report: 05-016-065

Model: 3430 Troxler ID: 27881
Moisture Std: 642 Density Std: 2207
Offsets: Moisture - Density -
Acceptable Zone

Comments: Unless otherwise stated - All test at taken at a depth of 6-in.
Two (2) standard counts were taken on the admix to calibrate the Troxler

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-010	1	7:50	3	112.3	16.6%	0.501	N/A	89.0%	N-2	Pass
SL-011	1	7:55	3	111.8	18.3%	0.508	N/A	97.0%	O-2	Pass
SL-012	1	8:00	3	114.4	17.4%	0.503	N/A	93.0%	P-2	Pass
SL-013	1	9:30	3	112.4	17.8%	0.499	N/A	96.0%	N-4	Pass
SL-014	1	9:35	3	113.3	15.4%	0.487	N/A	85.0%	O-4	Pass
SL-015	1	9:40	3	112.0	16.5%	0.505	N/A	88.0%	P-4	Pass
SL-016	1	12:35	3	113.5	15.5%	0.49	N/A	85.0%	P-1	Pass
SL-017	1	12:40	3	115.7	14.6%	0.457	N/A	86.0%	O-1	Pass
SL-018	1	12:45	3	112.2	16.1%	0.502	N/A	87.0%	N-1	Pass
SL-019	2	14:30	3	111.7	17.0%	0.513	N/A	89.0%	P-4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-010				
SL-011				
SL-012				
SL-013				
SL-014				
SL-015				
SL-016				
SL-017				
SL-018				
SL-019				



nvirotech Engineering & Consulting Inc

5-12-10
Date

FIELD DENSITY TEST (ASTM D-6938)

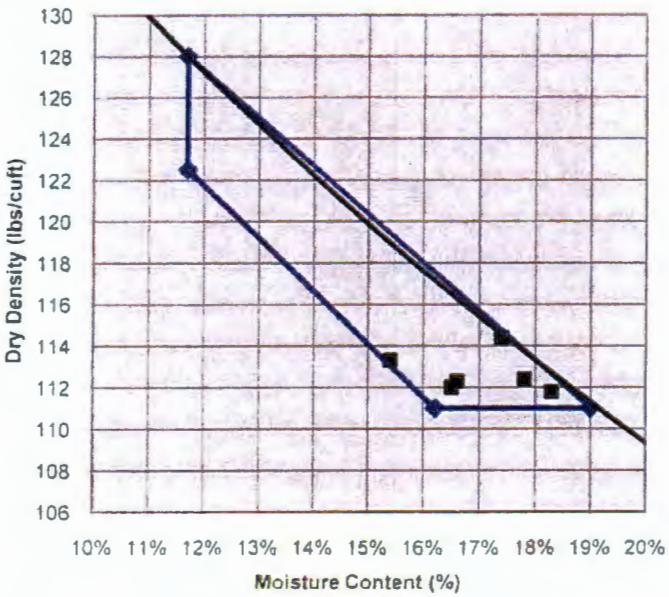
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/11/2010
Description: Admix Soil
Report: 05-016-065
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.
Two (2) standard counts were taken on the admix to calibrate the Troxler.

Model: 3430 Troxler ID: 27881
Moisture Std: 642 Density Std 2207
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-020	2	14:35	3	111.9	17.3%	0.507	N/A	92.0%	O-4	Pass
SL-021	2	14:40	3	111.8	17.9%	0.511	N/A	95.0%	N-4	Pass
SL-022	1	15:05	3	113.2	16.9%	0.489	16.0%	93.0%	I-1	Pass
SL-023	1	15:15	3	112.2	17.8%	0.539	N/A	89.0%	J-1	Pass
SL-024	1	15:20	3	114.4	15.5%	0.474	N/A	88.0%	K-1	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-020				
SL-021				
SL-022	SC	2258.1	2016.4	505.6
SL-023				
SL-024				



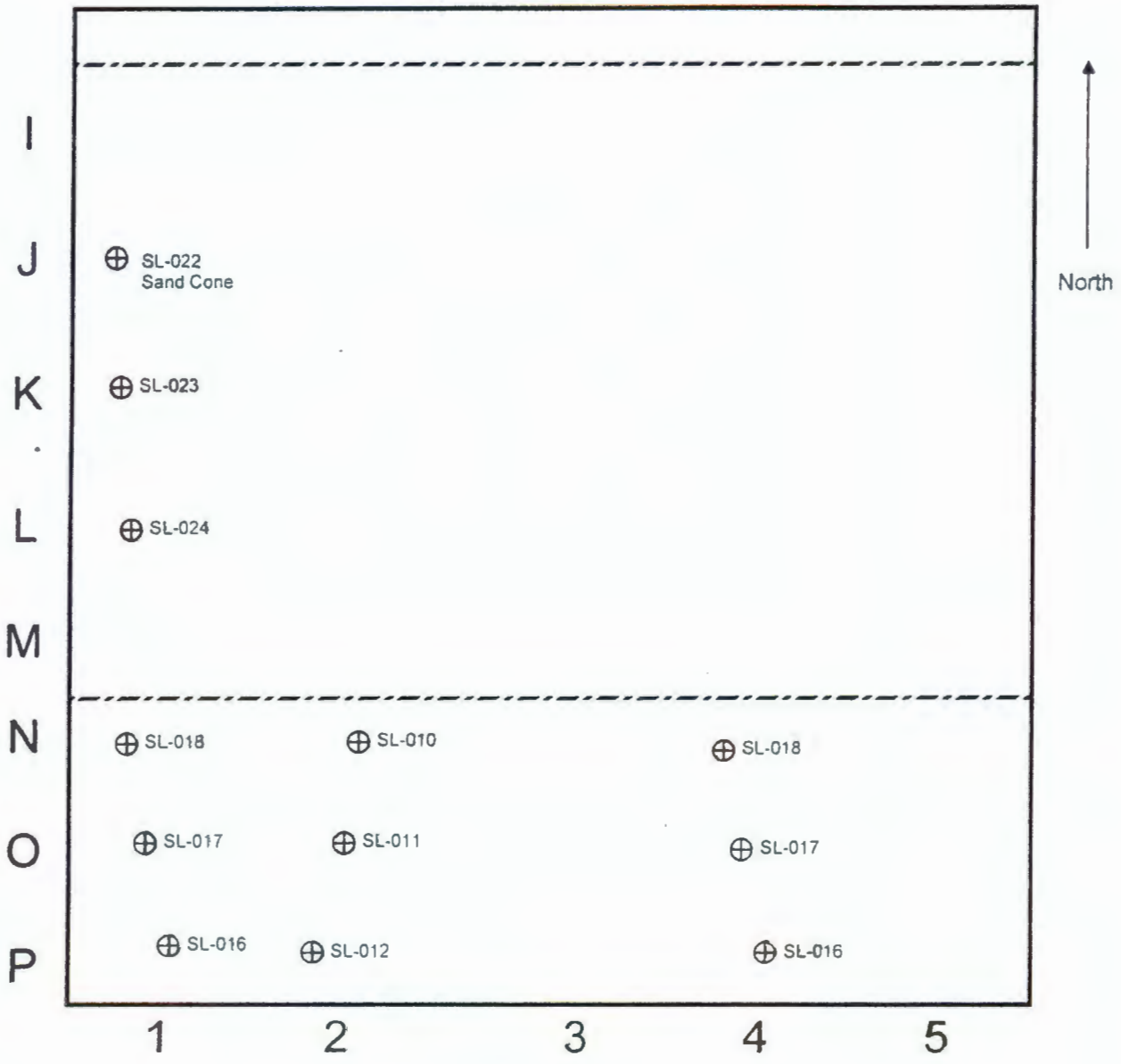
Envirotech Engineering & Consulting, Inc

5-12-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

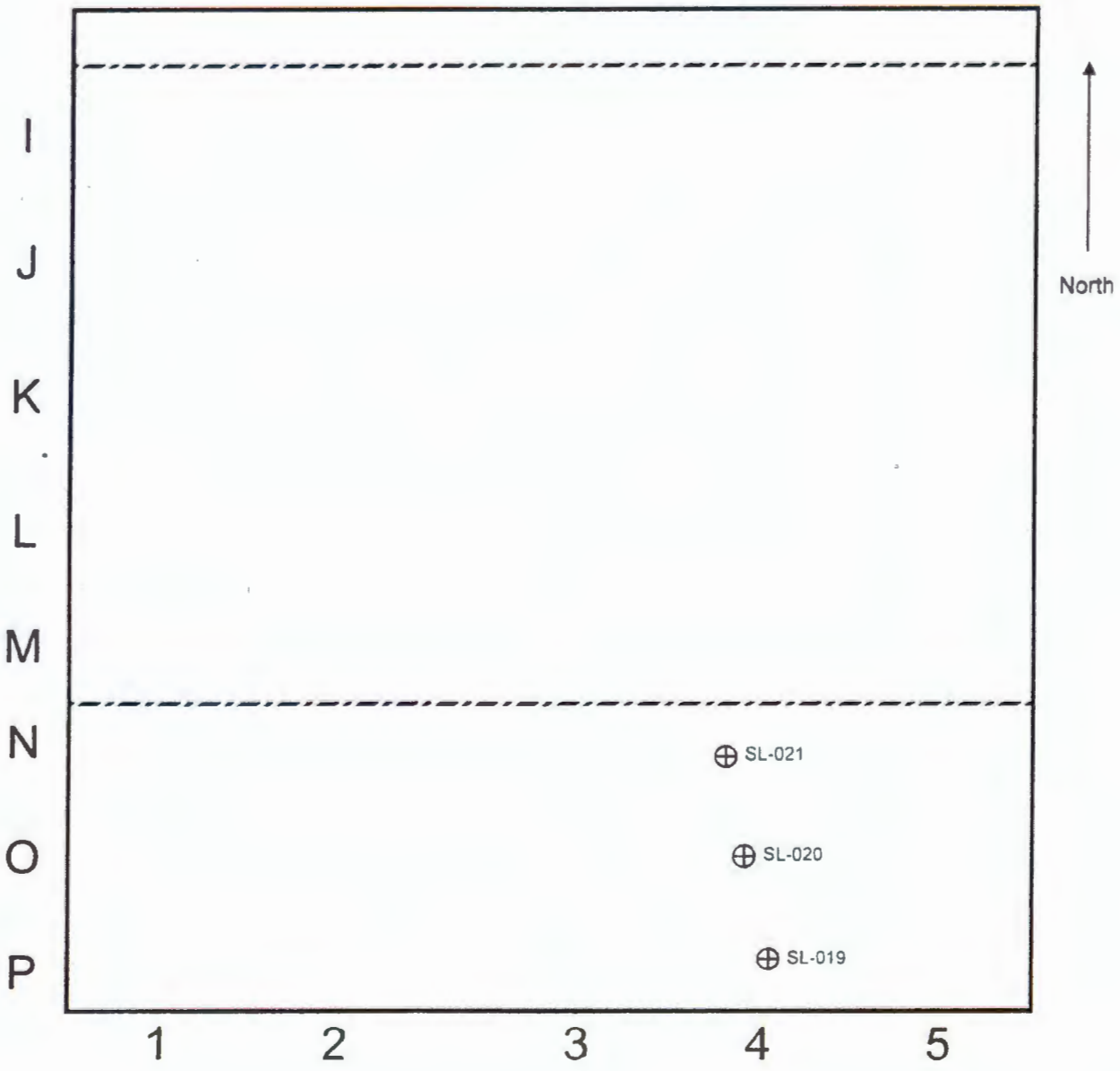
Date:	5/11/2010	Lift:	No. 1
Report:	05-016-065	Operator:	L. Hay
Map No:	1 of 2	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

Date:	5/11/2010	Lift:	No. 2
Report:	05-016-065	Operator:	L. Hay
Map No.	2 of 2	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client:	WCH
Submittal:	05-18G Admix Test Pad Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-022
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/11/2010
Tested By:	L. Hay	Date:	5/11/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams TW	Date:	5/12/2010	Date Received:	5/11/2010
Comments				Report No.:	05-016-065

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	5528.8 g
9. Mass of bottle + cone + sand (after use), W_8	2635.6 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0292 ft^3
11. Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2258.10 g
13. Mass of gallon can + dry soil, W_9	2016.40 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	132.27 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.0%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	114.03 lb/ft^3
17. Comparision moisture content =	16.9%
18. Dry unit weight comparison =	113.2 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

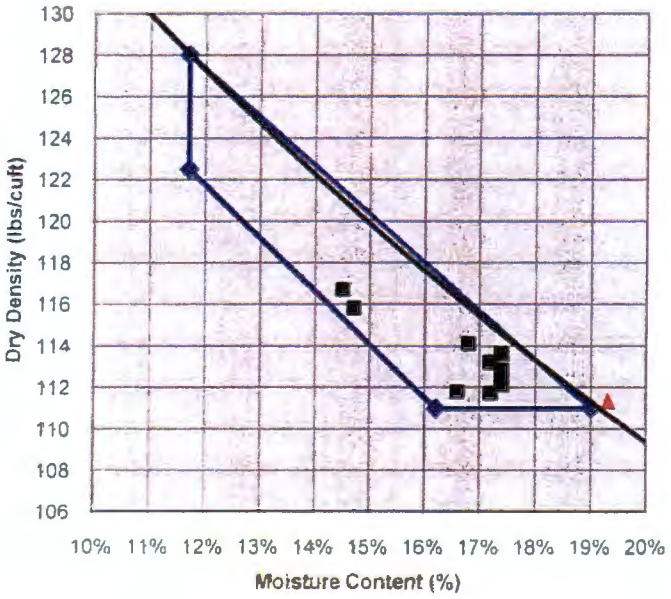
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/12/2010
Description: Admix Soil
Report: 05-016-066
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 644 Density Stc 2229
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-25	2	6:50	3	114.1	16.8%	0.477	N/A	95.0%	N3	Pass
SL-26	2	6:55	3	111.8	16.6%	0.509	N/A	88.0%	O3	Pass
SL-27	2	7:00	3	111.7	17.2%	0.512	N/A	91.0%	P3	Pass
SL-28	2	7:05	3	112.1	17.4%	0.504	N/A	93.0%	P2	Pass
SL-29	2	7:10	3	113.6	17.4%	0.484	N/A	97.0%	O2	Pass
SL-30	2	7:15	3	112.8	17.4%	0.494	N/A	95.0%	N2	Pass
SL-31	3	8:05	3	113.2	17.2%	0.489	N/A	95.0%	M1	Pass
SL-32	3	8:20	3	111.3	19.3%	0.524	N/A	99.0%	M2	Fail
SL-33	3	8:25	3	115.8	14.7%	0.462	N/A	86.0%	M3	Pass
SL-34	2	8:50	3	116.7	14.5%	0.444	N/A	88 0%	N1	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-25				
SL-26				
SL-27				
SL-28				
SL-29				
SL-30				
SL-31	Sh. Tube	TBD	TBD	TBD
SL-32				
SL-33				
SL-34				



Envirotech Engineering & Consulting, Inc

5-13-10
Date

FIELD DENSITY TEST (ASTM D-6938)

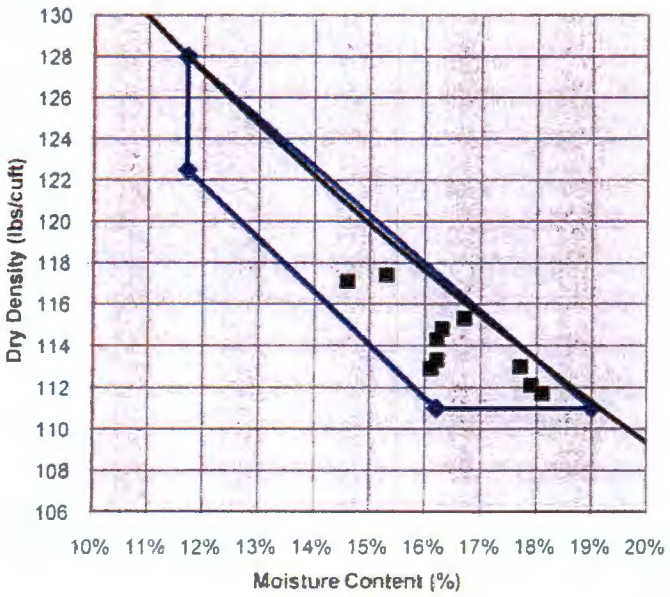
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/12/2010
Description: Admix Soil
Report: 05-016-066
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 644 Density Stc 2229
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-35	2	8:55	3	117.4	15.3%	0.436	N/A	95.0%	O1	Pass
SL-36	2	9:00	3	115.3	16.7%	0.462	N/A	98.0%	P1	Pass
SL-32A	3	9:15	5	113.0	17.7%	0.497	17.2%	96.0%	M2	Pass
SL-37	3	10:50	3	113.3	16.2%	0.488	N/A	90.0%	N4	Pass
SL-38	3	10:55	3	117.1	14.6%	0.440	N/A	90.0%	O4	Pass
SL-39	3	11:00	3	114.3	16.2%	0.474	N/A	92.0%	P4	Pass
SL-40	3	11:05	3	114.8	16.3%	0.468	N/A	94.0%	P3	Pass
SL-41	3	11:10	3	112.1	17.9%	0.521	N/A	93.0%	O3	Pass
SL-42	3	11:15	3	112.9	16.1%	0.477	N/A	91.0%	N3	Pass
SL-43	3	14:00	3	111.7	18.1%	0.510	N/A	96.0%	N2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-35				
SL-36				
SL-32A	SC	2015.7	1777.9	394.4
SL-37				
SL-38				
SL-39				
SL-40				
SL-41				
SL-42				
SL-43				



Tyler Willer
Envirotech Engineering & Consulting, Inc

5-13-10
Date

FIELD DENSITY TEST (ASTM D-6938)

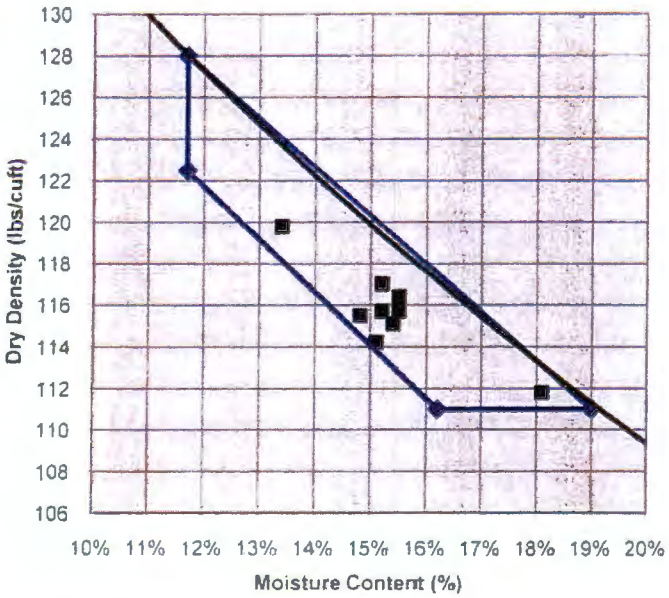
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/12/2010
Description: Admix Soil
Report: 05-016-066
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 644 Density Stc 2229
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-44	3	14:05	3	116.4	15.5%	0.448	N/A	93.0%	O2	Pass
SL-45	3	14:10	3	115.5	14.8%	0.459	N/A	87.0%	P2	Pass
SL-46	3	14:15	3	115.7	15.2%	0.457	N/A	90.0%	P1	Pass
SL-47	3	14:20	3	119.8	13.4%	0.407	N/A	89.0%	O1	Pass
SL-48	3	14:40	3	111.8	18.1%	0.509	N/A	96.0%	N1	Pass
SL-49	4	14:45	3	115.1	15.4%	0.464	N/A	90.0%	M1	Pass
SL-50	4	14:50	3	115.7	15.5%	0.457	N/A	92.0%	M2	Pass
SL-51	4	15:00	3	114.2	15.1%	0.475	N/A	86.0%	M3	Pass
SL-52	4	15:05	3	117.0	15.2%	0.44	N/A	93.0%	M4	Pass
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-44				
SL-45				
SL-46				
SL-47				
SL-48				
SL-49				
SL-50				
SL-51				
SL-52				



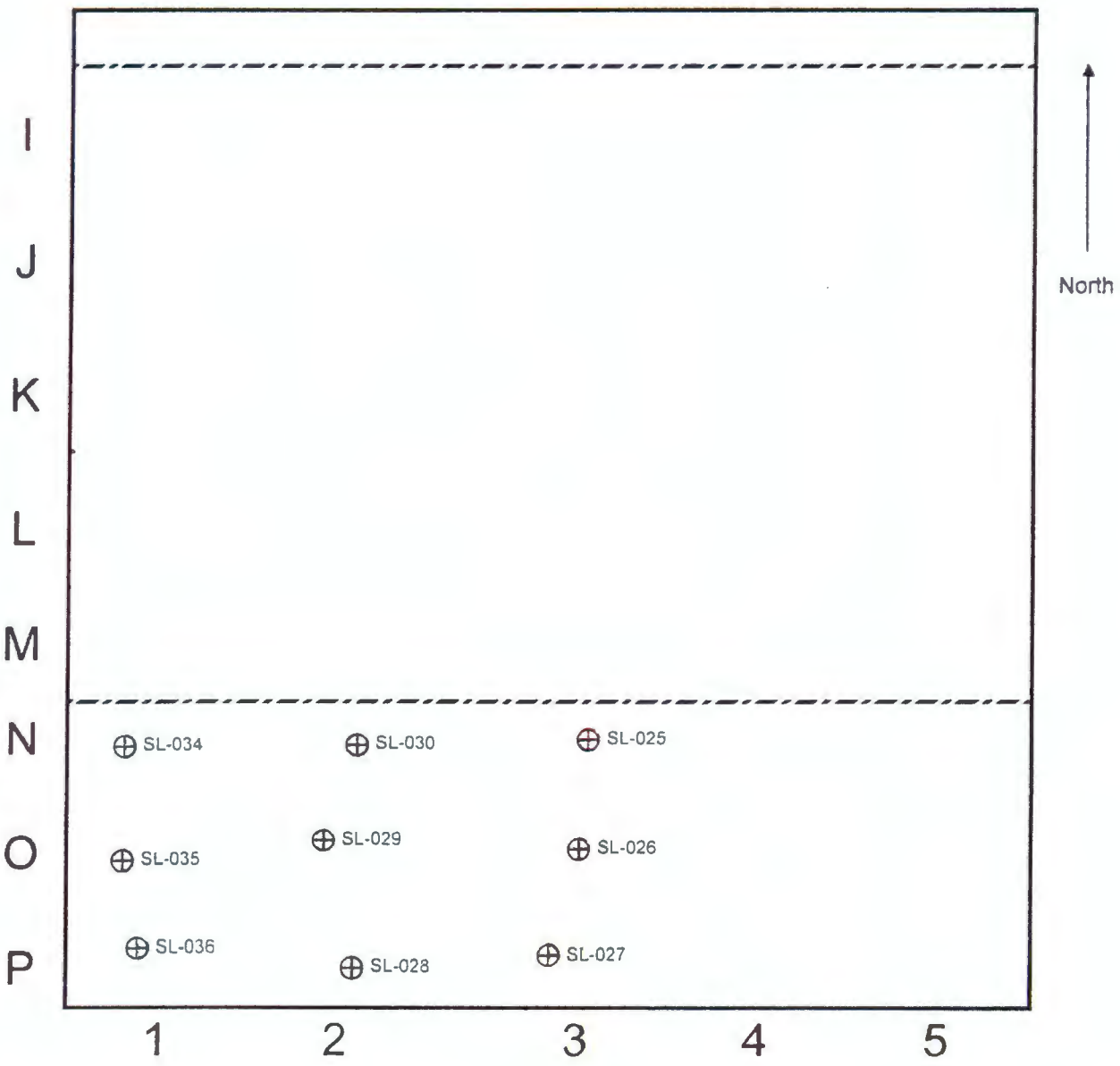
Envirotech Engineering & Consulting, Inc

5-13-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

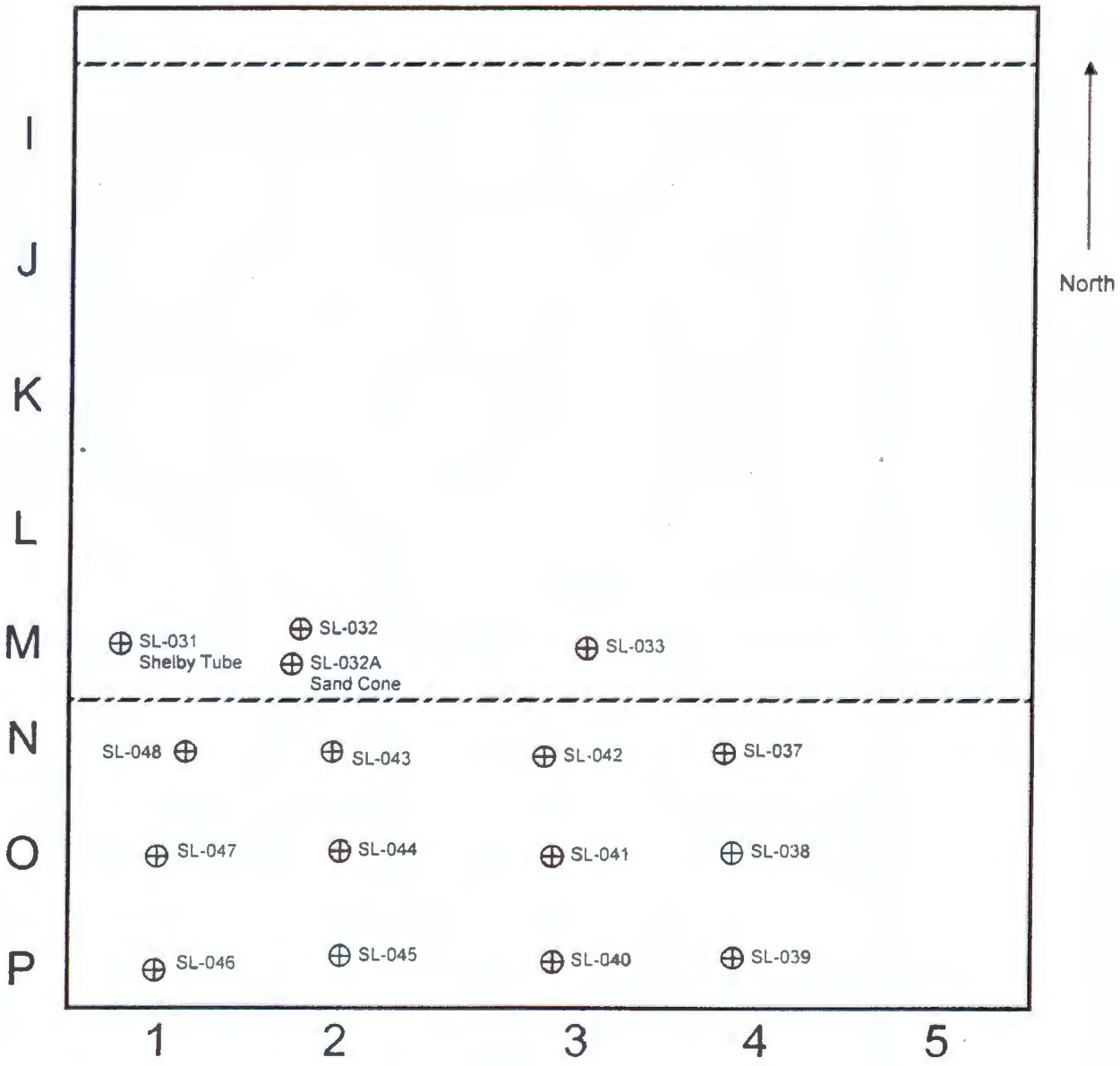
Date:	5/12/2010	Lift:	No. 2
Report:	05-016-066	Operator:	L. Hay
Map No:	1 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

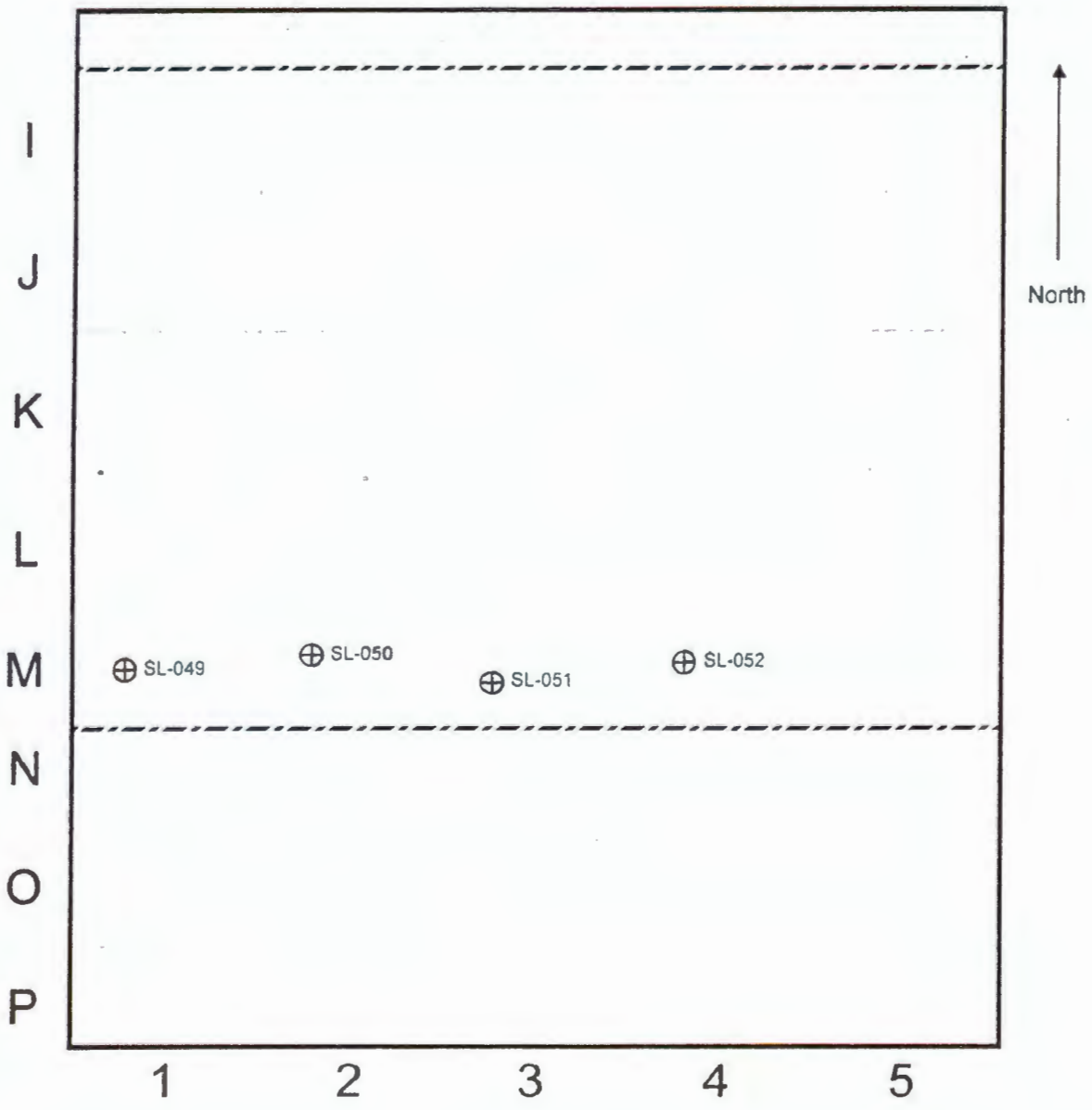
Date:	5/12/2010	Lift:	No. 3
Report:	05-016-066	Operator:	L. Hay
Map No:	2 of 3	Material:	Admix
Grid.	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/12/2010	Lift:	No. 4
Report:	05-016-066	Operator:	L. Hay
Map No:	3 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-032A
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/12/2010
Tested By:	L. Hay	Date:	5/12/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams TW	Date:	5/13/2010	Date Received:	5/12/2010
Comments				Report No.:	05-016-066

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6074.2 g
9. Mass of bottle + cone + sand (after use), W_8	3281.6 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma\, d\,(sand)}$	0.0269 ft^3
11. Mass of gallon can, W_5	394.40 g
12. Mass of gallon can + moist soil, W_7	2015.70 g
13. Mass of gallon can + dry soil, W_9	1777.90 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	133.00 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17.2%
16. Dry unit weight in the field, $_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	113.49 lb/ft^3
17. Comparision moisture content =	17.7%
18. Dry unit weight comparison =	113.0 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

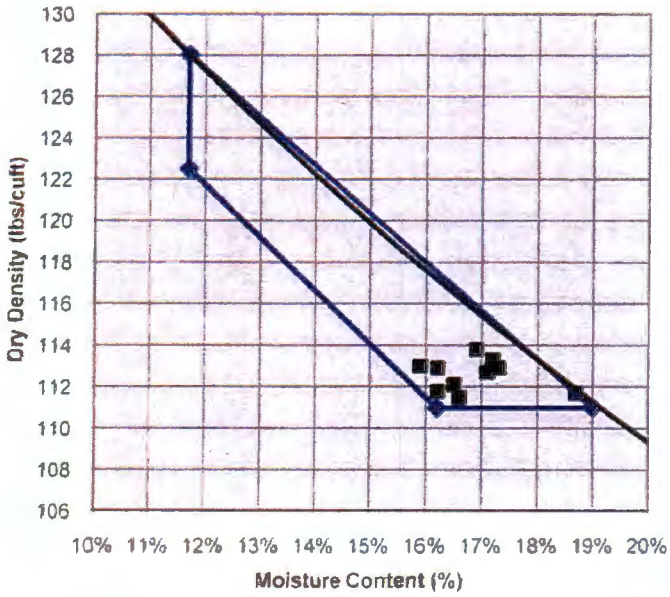
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/13/2010
Description: Admix Soil
Report: 05-016-067
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std. 639 Density Std 2230
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-53	4	9:50	3	113.8	16.9%	0.482	N/A	95.0%	N4	Pass
SL-54	4	9:55	3	113.3	17.2%	0.488	N/A	95.0%	O4	Pass
SL-55	4	10:00	3	112.7	17.1%	0.4696	N/A	98.0%	P4	Pass
SL-56	4	10:05	3	111.7	18.7%	0.51	N/A	99.0%	P3	Pass
SL-57	4	10:10	3	111.5	16.6%	0.513	N/A	87.0%	O3	Pass
SL-58	4	10:15	3	112.1	16.5%	0.503	N/A	89.0%	N3	Pass
SL-59	4	13:50	3	111.8	16.2%	0.51	N/A	86.0%	N2	Pass
SL-60	4	13:55	3	113.0	15.9%	0.493	N/A	87.0%	O2	Pass
SL-61	4	14:30	3	112.9	17.3%	0.493	N/A	95.0%	P2	Pass
SL-62	4	14:40	3	112.9	16.2%	0.493	N/A	89.0%	P1	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-53				
SL-54				
SL-55				
SL-56				
SL-57				
SL-58				
SL-59				
SL-60	Sh. Tube	TBD	TBD	TBD
SL-61				
SL-62				



nvirotech Engineering & Consulting, Inc

5-14-2010
Date

FIELD DENSITY TEST (ASTM D-6938)

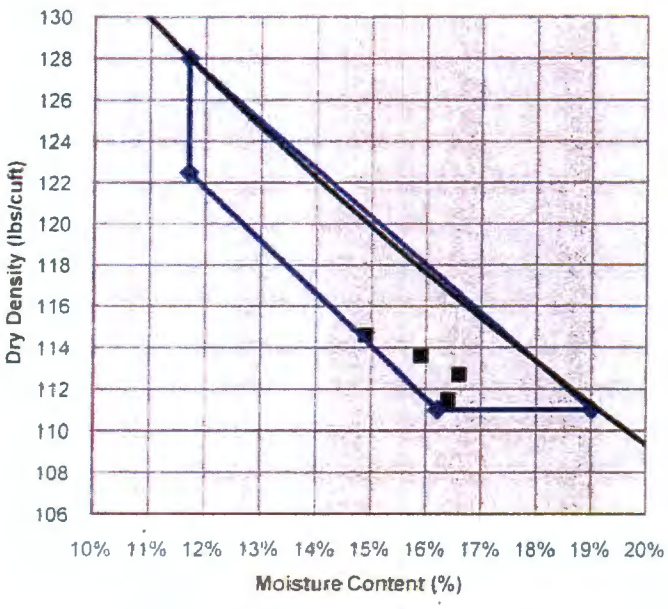
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/13/2010
Description: Admix Soil
Report: 05-016-067
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 639 Density Std 2230
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-63	4	14:40	3	114.6	14.9%	0.471	N/A	85.0%	O1	Pass
SL-64	4	14:45	3	113.6	15.9%	0.484	N/A	89.0%	N1	Pass
SL-65	5	15:30	3	112.7	16.6%	0.495	17.6%	91.0%	M1	Pass
SL-66	5	15:45	3	111.5	16.4%	0.512	N/A	86.0%	M2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-63				
SL-64				
SL-65	SC	2041.3	1811.6	505.6
SL-66				



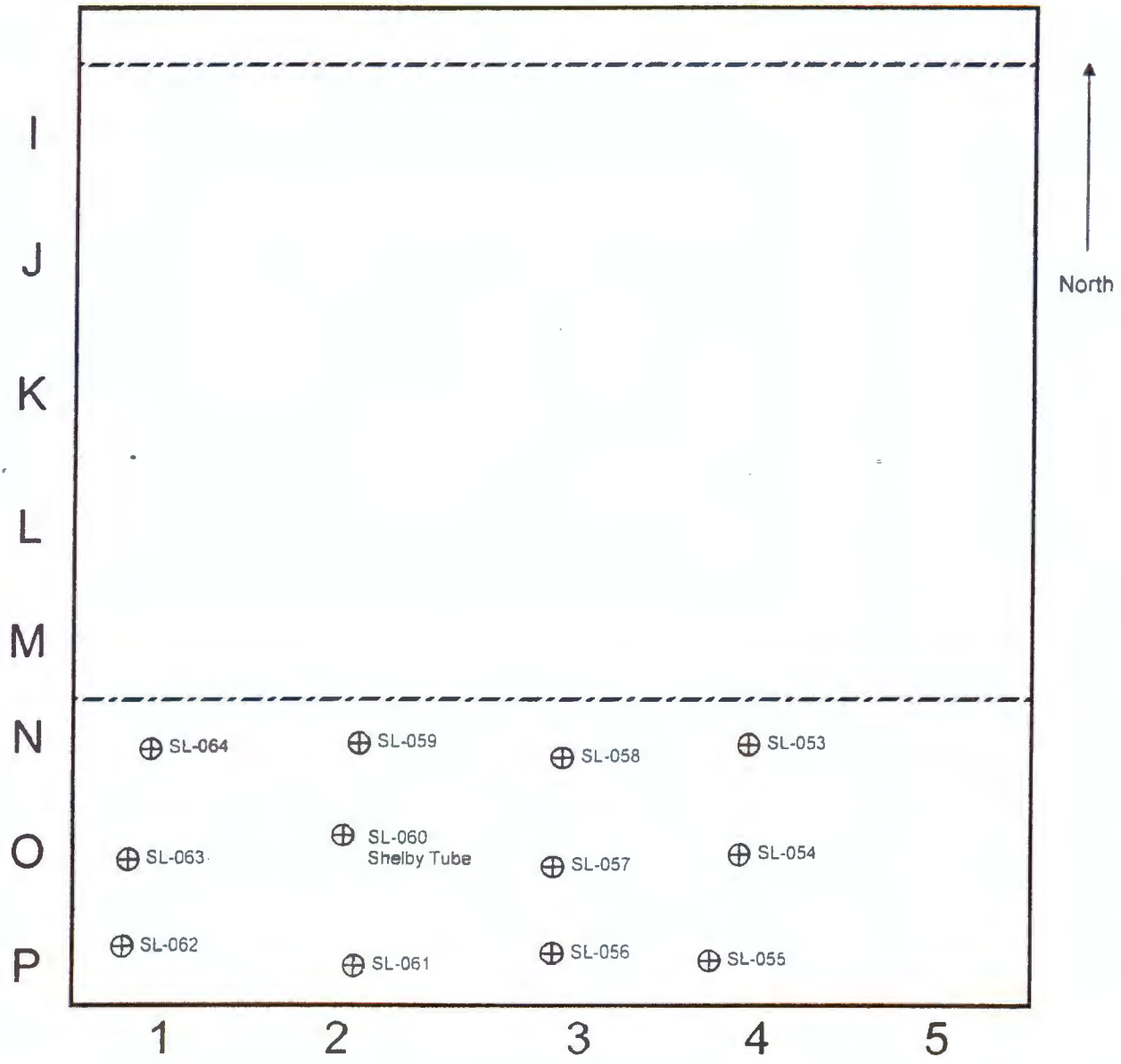
nvirotech Engineering & Consulting, Inc

5-14-2010
Date

S/C. S013213A00

CQA Moisture Density Map Cell 9

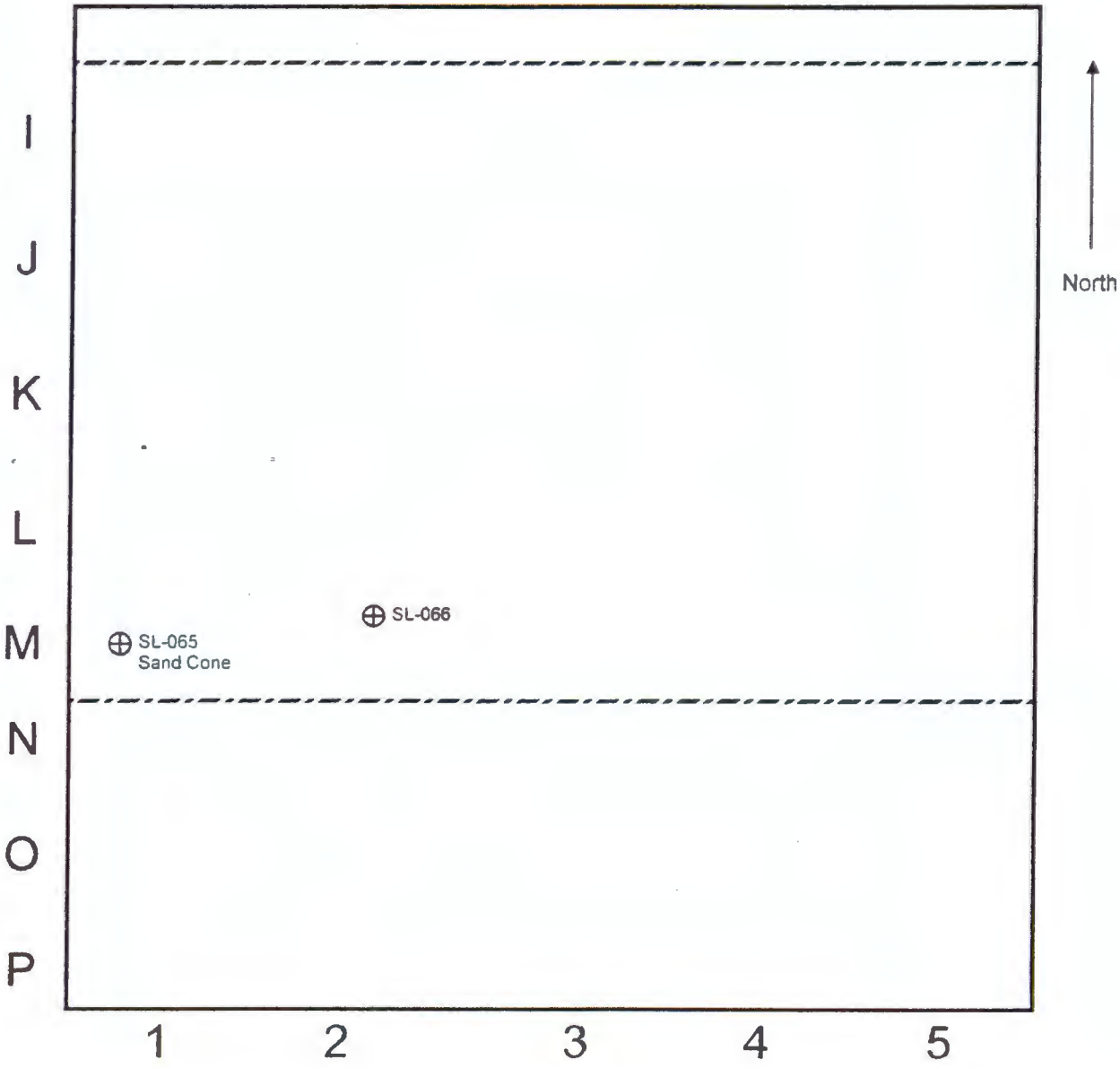
Date	5/13/2010	Lift:	No. 4
Report:	05-016-067	Operator:	L. Hay
Map No:	1 of 2	Material:	Admix
Grid.	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/13/2010	Lift:	No. 5
Report:	05-016-067	Operator:	L. Hay
Map No:	2 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-065
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/13/2010
Tested By:	L. Hay	Date:	5/13/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams TW	Date:	5/14/2010	Date Received:	5/13/2010
Comments				Report No.:	05-016-067

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6351.9 g
9. Mass of bottle + cone + sand (after use), W_8	3695.4 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0237 ft^3
11 Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2041.30 g
13. Mass of gallon can + dry soil, W_9	1811.60 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	142.76 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17.6%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	121.41 lb/ft^3
17. Comparision moisture content =	16.6%
18. Dry unit weight comparison =	112.7 lb/ft^3

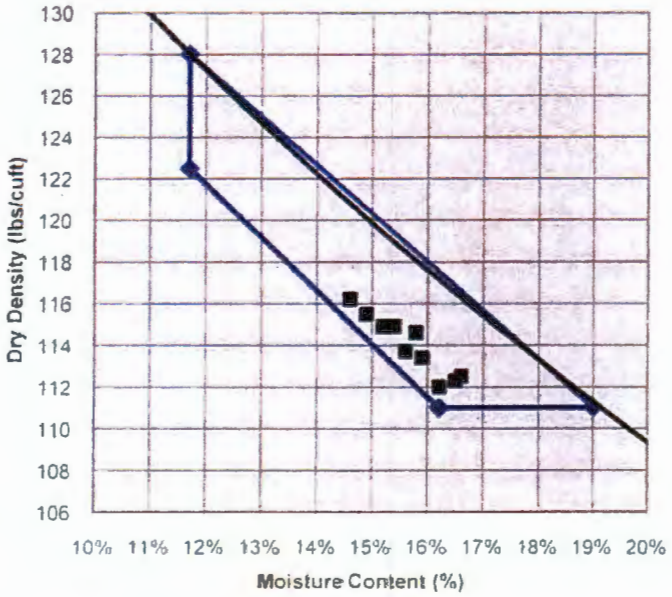
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project:	S013213A00	Model:	3430	Troxler ID:	27881
Test Date:	5/14/2010	Moisture Std.	654	2220	2230
Description	Admix Soil	Offsets:	Moisture -	Density -	
Report:	05-016-068	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-67	5	7:30	3	112.5	16.6%	0.498	18.7%	90.0%	M3	Pass
SL-68	5	7:35	3	114.9	15.2%	0.467	N/A	88.0%	M4	Pass
SL-69	2	8:10	3	116.2	14.6%	0.451	N/A	87.0%	L1	Pass
SL-70	2	8:15	3	112.3	16.5%	0.501	N/A	89.0%	K1	Pass
SL-71	2	8:20	3	115.5	14.9%	0.46	N/A	87.0%	J1	Pass
SL-72	5	9:25	3	113.7	15.6%	0.482	N/A	87.0%	N4	Pass
SL-73	5	9:30	3	112.0	16.2%	0.506	N/A	86.0%	O4	Pass
SL-74	5	9:35	3	114.9	15.4%	0.461	N/A	90.0%	P4	Pass
SL-75	5	9:40	3	114.6	15.8%	0.471	N/A	91.0%	P3	Pass
SL-76	5	9:45	3	113.4	15.9%	0.487	N/A	88.0%	O3	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-67	SC	1947.6	1668.7	174.3
SL-68				
SL-69				
SL-70				
SL-71				
SL-72				
SL-73				
SL-74				
SL-75				
SL-76				



Envirotech Engineering & Consulting, Inc

5-17-10
Date

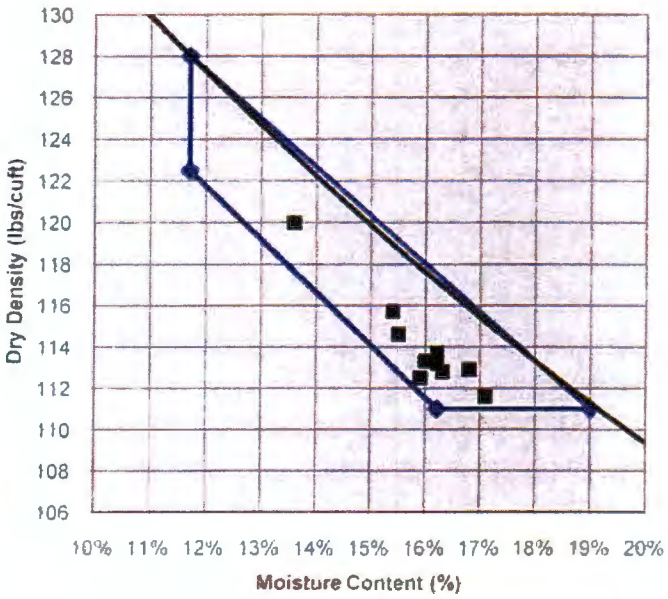
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal:	05-18J Admix Field Data				
Project:	S013213A00	Model:	3430	Troxler ID:	27881
Test Date	5/14/2010	Moisture Std.	654	2220	2230
Description	Admix Soil	Offsets:	Moisture	-	Density -
Report	05-016-068	Acceptable Zone			
Comments:	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-77	5	9:50	3	111.6	17.1%	0.517	N/A	89.0%	N3	Pass
SL-78	5	13:10	3	112.9	16.8%	0.493	N/A	92.0%	N2	Pass
SL-79	5	13:15	3	112.5	15.9%	0.501	N/A	86.0%	O2	Pass
SL-80	5	13:20	3	112.8	16.3%	0.495	N/A	89.0%	P2	Pass
SL-81	5	13:25	3	114.6	15.5%	0.470	N/A	89.0%	P1	Pass
SL-82	5	13:30	3	113.3	16.0%	0.488	N/A	89.0%	O1	Pass
SL-83	5	13:35	3	120.0	13.6%	0.405	N/A	91.0%	N1	Pass
SL-84	6	14:15	3	113.7	16.2%	0.483	N/A	91.0%	M4	Pass
SL-85	6	14:20	3	115.7	15.4%	0.457	N/A	91.0%	M3	Pass
SL-86	6	14:25	3	113.2	16.2%	0.490	N/A	89.0%	M2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-77				
SL-78				
SL-79				
SL-80				
SL-81				
SL-82				
SL-83				
SL-84				
SL-85				
SL-86				



nvirotech Engineering & Consulting, Inc

5-17-10
Date

FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

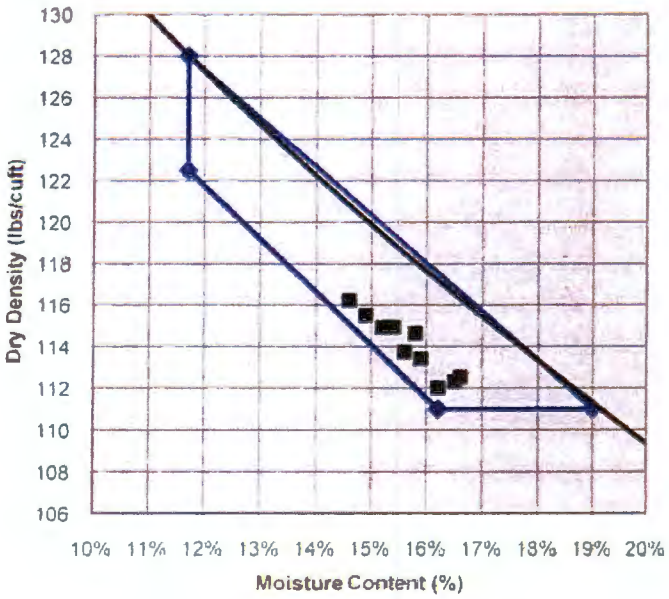
Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/14/2010
Description: Admix Soil
Report: 05-016-068

Model 3430 Troxler ID: 27881
Moisture Std: 654 2220 2230
Offsets: Moisture - Density -
Acceptable Zone

Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-87	6	14:30	3	113.3	17.0%	0.488	N/A	94.0%	M1	Pass
SL-88	3	14:45	3	112.8	17.1%	0.491	N/A	94.0%	J1	Pass
SL-89	3	14:30	3	114.5	15.1%	0.472	N/A	86.0%	K1	Pass
SL-90	3	14:55	3	114.6	15.2%	0.471	N/A	87.0%	L1	Pass
SL-91	6	15:35	3	114.7	15.4%	0.469	N/A	89.0%	N4	Pass
SL-92	6	15:40	3	115.9	14.4%	0.455	N/A	85.0%	O4	Pass
SL-93	6	15:45	3	116.7	14.2%	0.445	N/A	86.0%	P4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-87				
SL-88				
SL-89				
SL-90				
SL-91				
SL-92				
SL-93				



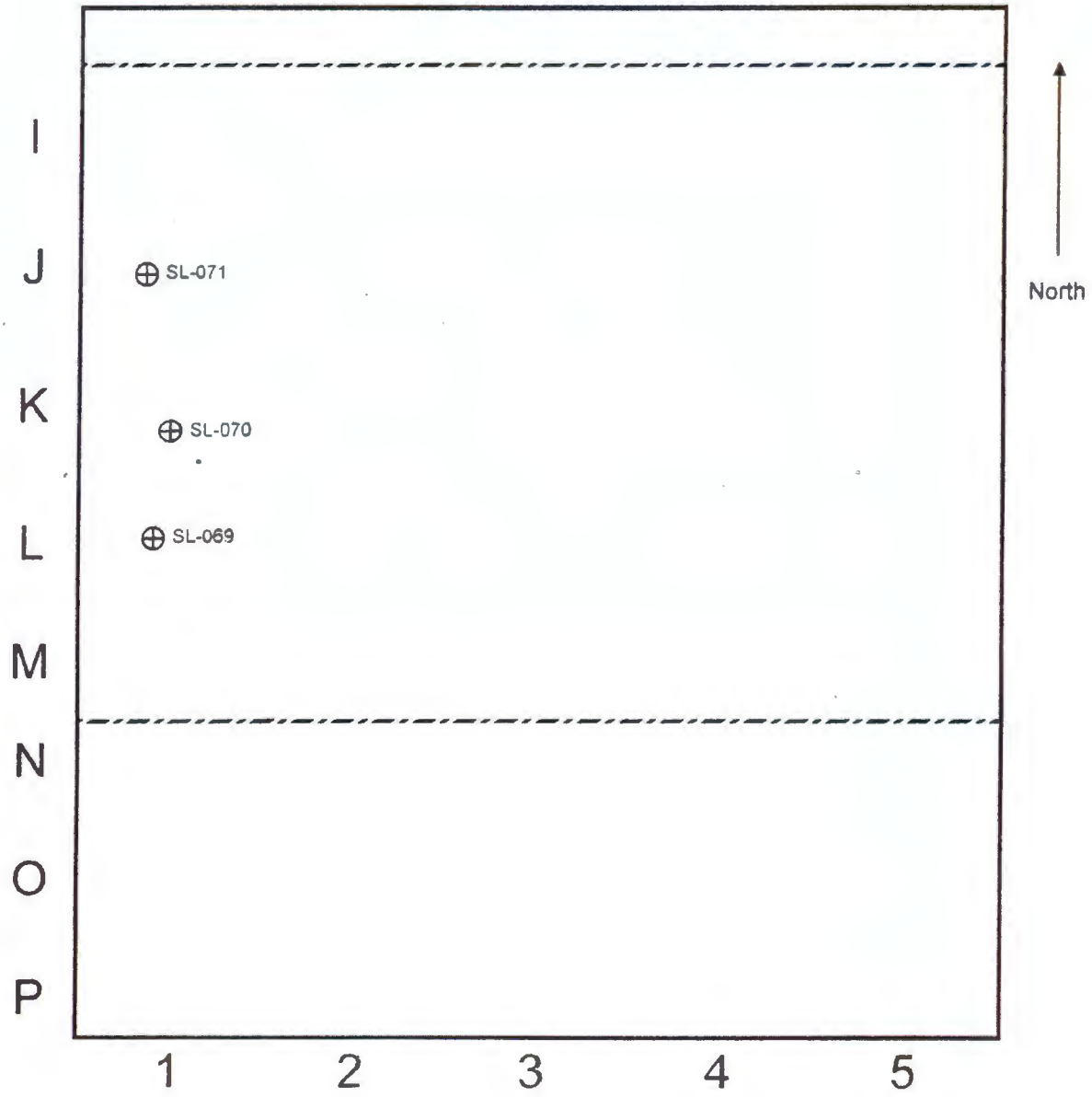
Envirotech Engineering & Consulting Inc

5-17-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

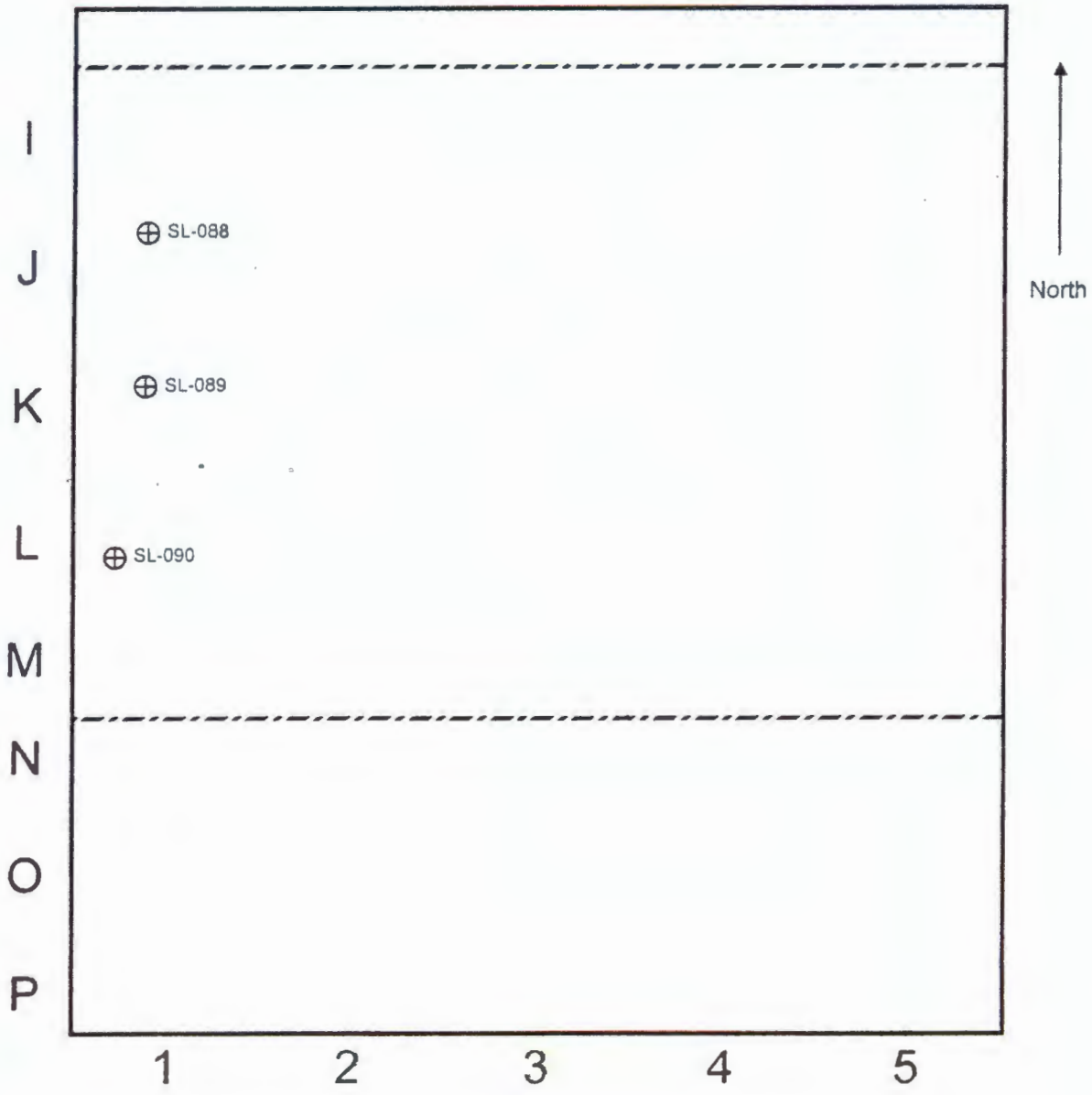
Date.	5/14/2010	Lift.	No. 2
Report:	05-016-068	Operator:	L. Hay
Map No:	1 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes.	



S/C: S013213A00

CQA Moisture Density Map Cell 9

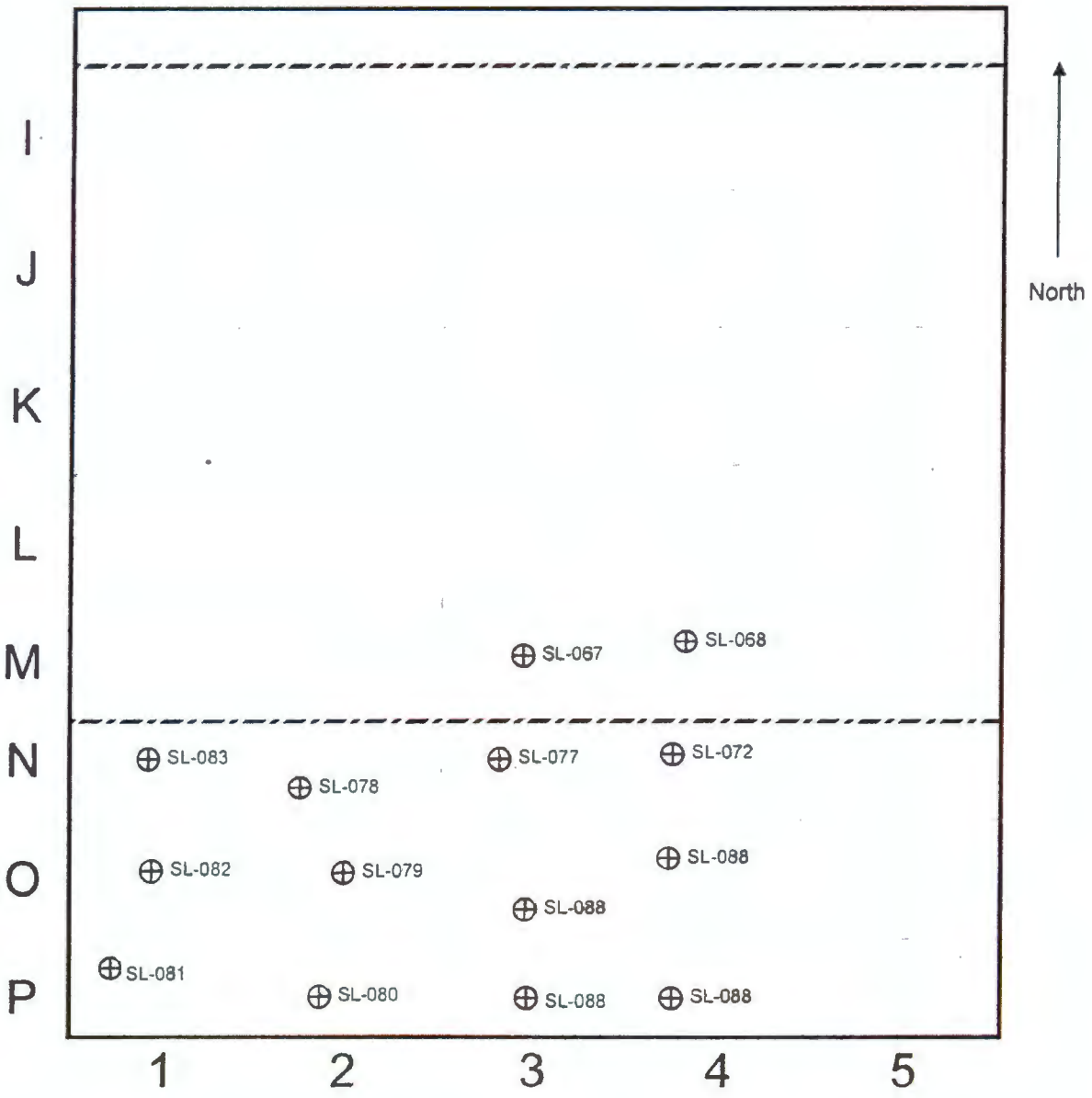
Date:	5/14/2010	Lift:	No. 3
Report:	05-016-068	Operator:	L. Hay
Map No:	2 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

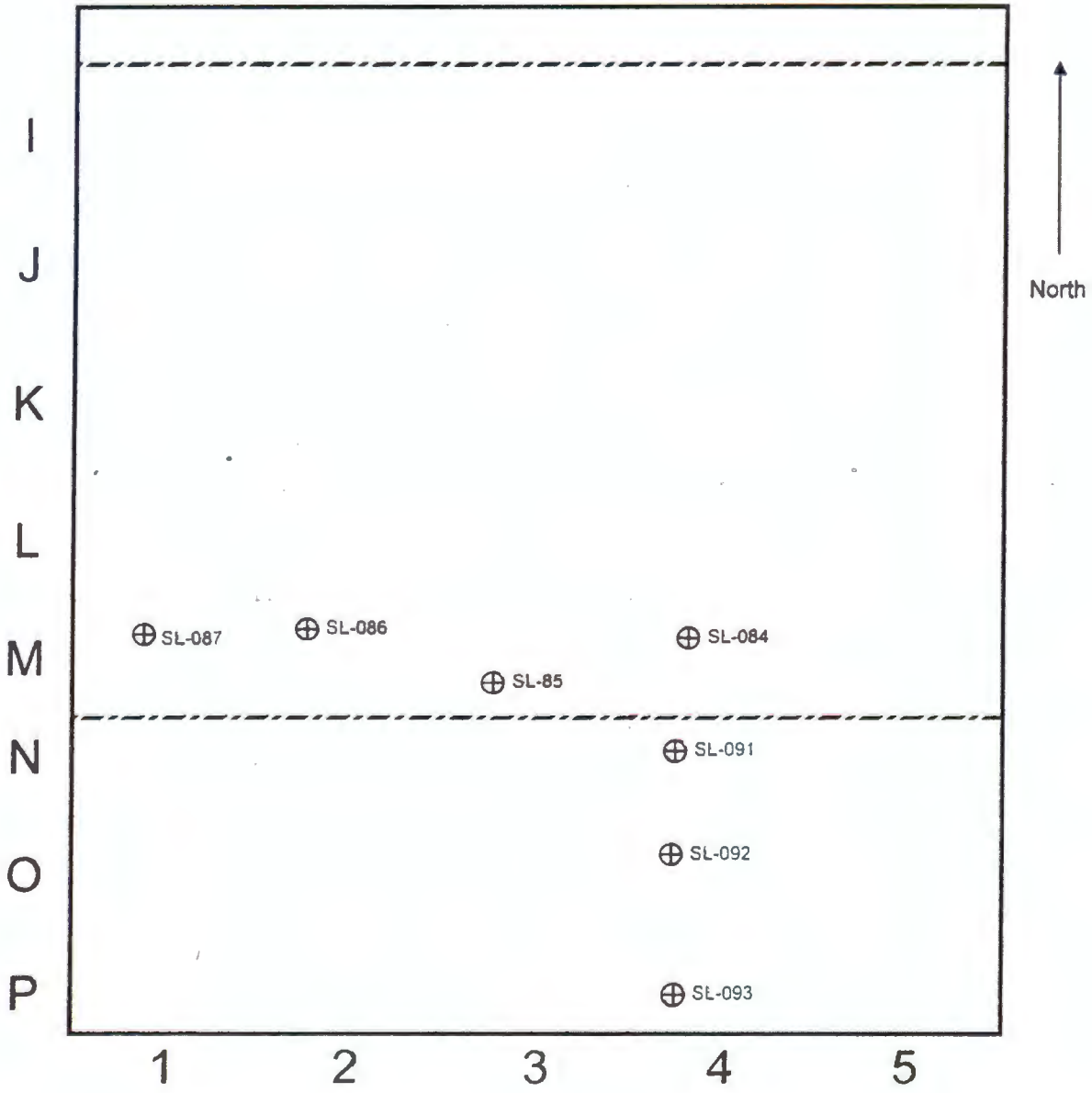
Date:	5/14/2010	Lift:	No. 5
Report:	05-016-068	Operator:	L. Hay
Map No:	3 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/14/2010	Lift:	No. 6
Report:	05-016-068	Operator:	L. Hay
Map No:	4 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580) 234-8780 | Fax (580) 237-4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID.	SL-67
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/14/2010
Tested By:	L. Hay	Date:	5/14/2010	Sampled By	L. Hay
Reviewed By:	T. Williams TW	Date:	5/17/2010	Date Received:	5/14/2010
Comments				Report No.:	05-016-068

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	5806.5 g
9. Mass of bottle + cone + sand (after use), W_8	2932.0 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma\, d\,(sand)}$	0.0288 ft^3
11. Mass of gallon can, W_5	174.30 g
12. Mass of gallon can + moist soil, W_7	1947.60 g
13. Mass of gallon can + dry soil, W_9	1668.70 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	135.86 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	18 7%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	114.49 lb/ft^3
17. Comparision moisture content =	16.6%
18. Dry unit weight comparison =	112.5 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

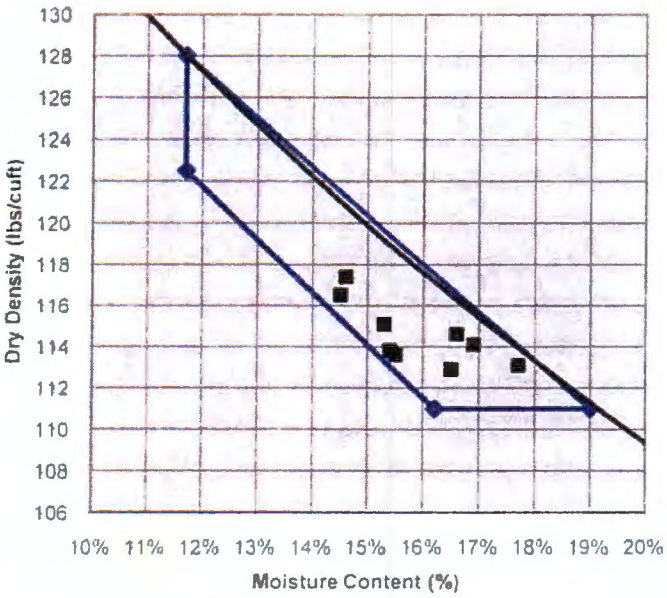
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/17/2010
Description: Admix Soil
Report: 05-016-069
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model 3430 Troxler ID: 27881
Moisture Std. 644 2220 2252
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-94	6	8:50	3	113.8	15.4%	0.482	N/A	86.0%	N3	Pass
SL-95	6	8:55	3	115.1	15.3%	0.465	N/A	89.0%	O3	Pass
SL-96	6	9:00	3	116.5	14.5%	0.447	N/A	88.0%	P3	Pass
SL-97	6	9:05	3	117.4	14.6%	0.436	N/A	90.0%	P2	Pass
SL-98	6	9:10	3	113.6	15.5%	0.484	N/A	86.0%	O2	Pass
SL-99	6	9:15	3	114.1	16.9%	0.478	N/A	95.0%	N2	Pass
SL-100	6	10:50	3	113.1	17.7%	0.490	TBD	98.0%	P1	Pass
SL-101	6	10:55	3	112.9	16.5%	0.493	N/A	90.0%	O1	Pass
SL-102	6	11:00	3	114.6	16.6%	0.471	TBD	95.0%	N1	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-94				
SL-95				
SL-96				
SL-97				
SL-98				
SL-99				
SL-100	Sh. Tube	TBD	TBD	TBD
SL-101				
SL-102	Sh. Tube	TBD	TBD	TBD



Envirotech Engineering & Consulting Inc

5-19-10
Date

FIELD DENSITY TEST (ASTM D-6938)

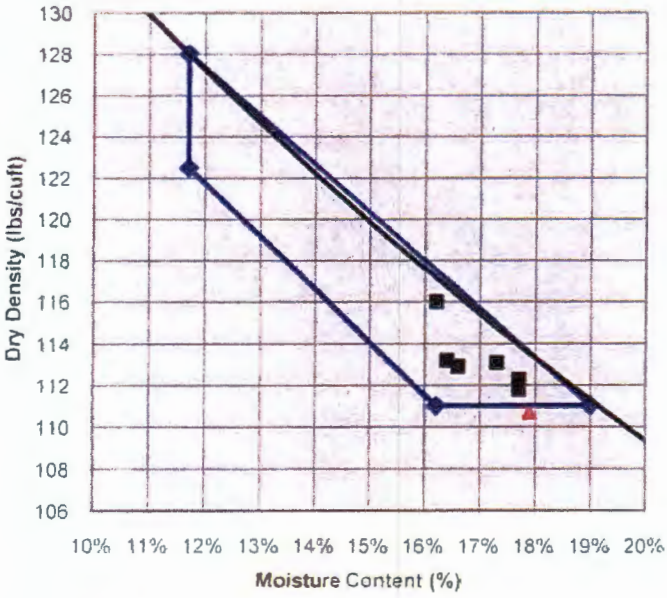
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/14/2010
Description: Admix Soil
Report: 05-016-068
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model 3430 Troxler ID: 27881
Moisture Std 654 2220 2230
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-103	4	13:15	3	113.2	16.4%	0.489	17.7%	91.0%	L1	Pass
SL-104	4	13:25	3	112.3	17.7%	0.501	N/A	95.0%	K1	Pass
SL-105	4	13:30	3	110.7	17.9%	0.523	N/A	92.0%	J1	Fail
SL-105A	4	14:15	5	113.1	17.3%	0.49	N/A	95.0%	J1	Pass
SL-106	1	15:15	3	116.0	16.2%	0.453	N/A	97.0%	L4	Pass
SL-107	1	15:20	3	111.8	17.7%	0.512	N/A	93.0%	L3	Pass
SL-108	1	15:25	3	112.9	16.6%	0.493	N/A	91.0%	L2	Pass
							N/A			
							TBD			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-103	S.C.	2079.8	1842.7	506
SL-104				
SL-105				
SL-105A				
SL-106				
SL-107				
SL-108				



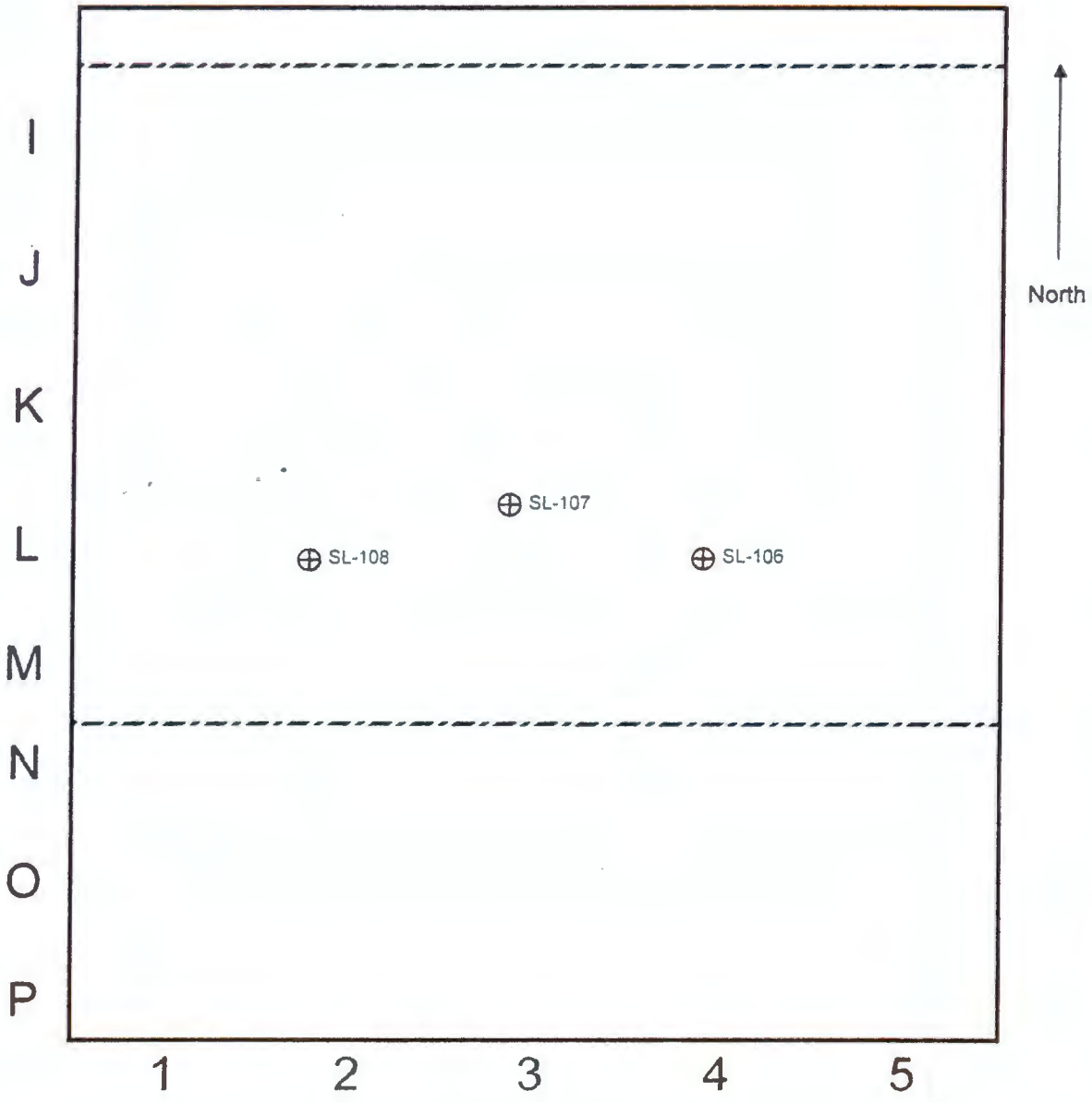
Envirotech Engineering & Consulting, Inc

5-19-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

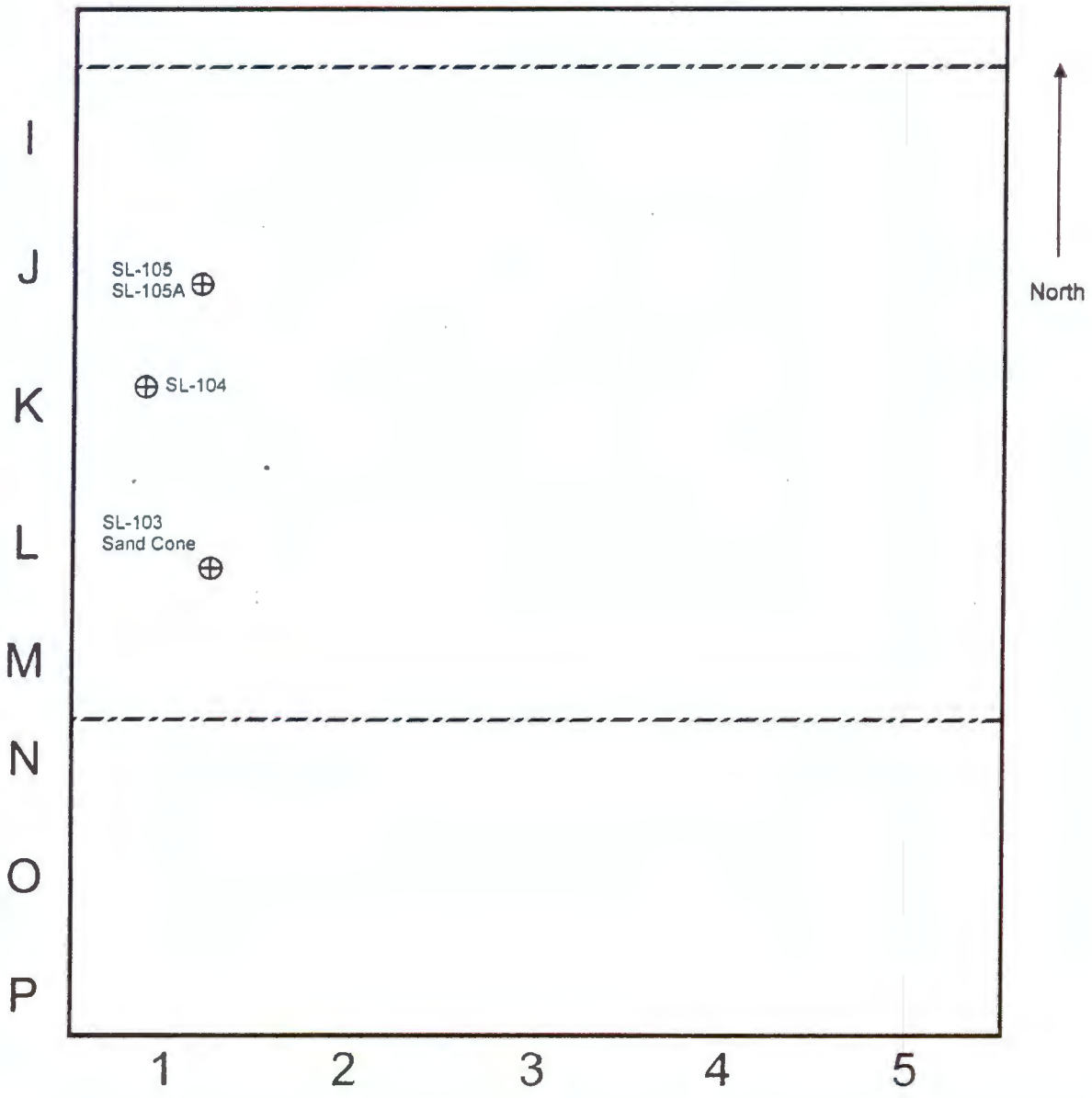
Date:	5/17/2010	Lift:	No. 1
Report:	05-016-069	Operator:	L. Hay
Map No:	1 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C. S013213A00

CQA Moisture Density Map Cell 9

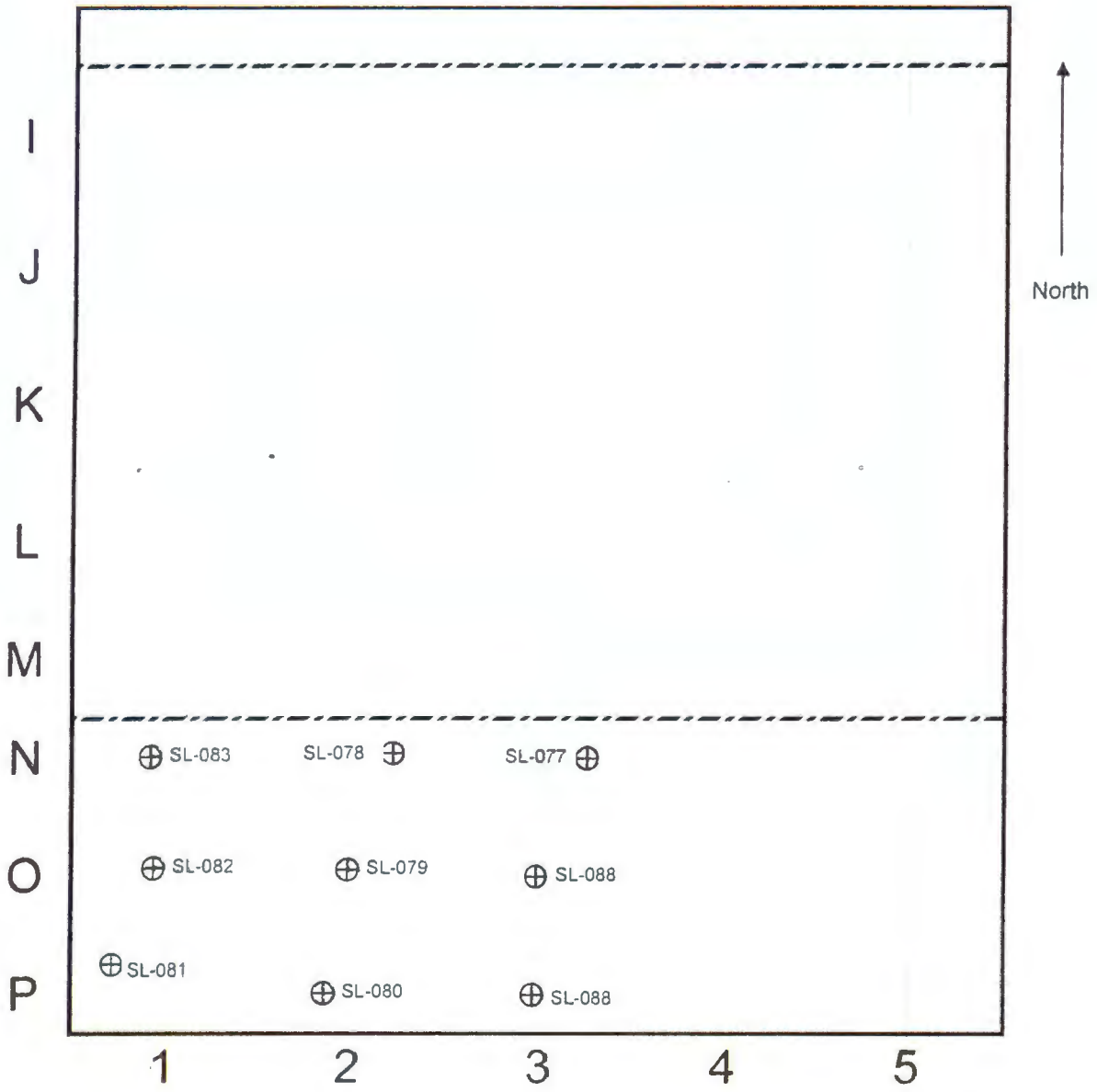
Date:	5/17/2010	Lift:	No. 4
Report:	05-016-069	Operator:	L. Hay
Map No.	2 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/17/2010	Lift:	No. 6
Report:	05-016-069	Operator:	L. Hay
Map No:	3 of 3	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-103
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/17/2010
Tested By:	L. Hay	Date:	5/17/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams	Date:	5/18/2010	Date Received:	5/17/2010
Comments				Report No.:	05-016-069

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6490.1 g
9. Mass of bottle + cone + sand (after use), W_8	3739.6 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma\, d\,(sand)}$	0.0259 ft^3
11. Mass of gallon can, W_5	506.00 g
12. Mass of gallon can + moist soil, W_7	2079.80 g
13. Mass of gallon can + dry soil, W_9	1842.70 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	133.97 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17.7%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	113.79 lb/ft^3
17. Comparision moisture content =	16.4%
18. Dry unit weight comparison =	113.2 lb/ft^3

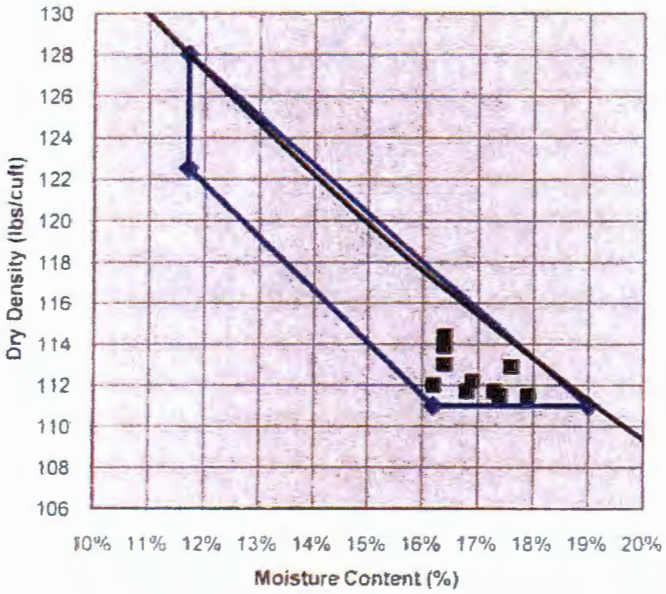
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal:	05-18J Admix Field Data				
Project	S013213A00	Model:	3430	Troxler ID:	27881
Test Date:	5/20/2010	Moisture Std.	648	Density Stc	2223
Description:	Admix Soil	Offsets:	Moisture -	Density	-
Report	05-016-072	Acceptable Zone			
Comments.	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-109	1	6:55	3	111.7	16.8%	0.513	N/A	88.0%	M5	Pass
SL-110	1	7:00	3	114.4	16.4%	0.473	N/A	94.0%	L5	Pass
SL-111	2	7:40	3	111.5	17.9%	0.514	N/A	94.0%	L4	Pass
SL-112	2	7:45	3	112.9	17.6%	0.493	N/A	96.0%	L3	Pass
SL-113	2	7:50	3	113.9	16.4%	0.480	N/A	92.0%	L2	Pass
SL-114	5	8:25	4	111.5	17.4%	0.514	N/A	91.0%	L1	Pass
SL-115	5	8:30	4	112.2	16.9%	0.503	N/A	91.0%	K1	Pass
SL-116	5	8:35	4	113.0	16.4%	0.492	N/A	90.0%	J1	Pass
SL-117	1	8:40	3	111.7	17.3%	0.508	N/A	92.0%	K2	Pass
SL-118	1	8:45	3	112.0	16.2%	0.504	N/A	87.0%	J2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-109				
SL-110				
SL-111				
SL-112				
SL-113				
SL-114				
SL-115				
SL-116				
SL-117				
SL-118				



virotech Engineering & Consulting, Inc

11/11/10
Date

FIELD DENSITY TEST (ASTM D-6938)

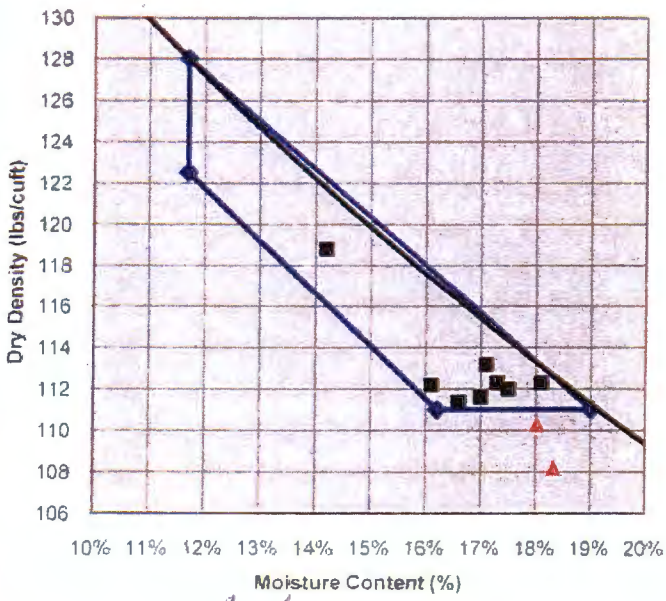
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/19/2010
Description: Admix Soil
Report: 05-016-071
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 650 Density Stc 2245
Offsets. Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-119	2	9:20	3	108.2	18.3%	0.557	N/A	89.0%	M5	Fail
SL-119A	2	9:25	3	110.3	18.0%	0.529	N/A	92.0%	M5	Fail
SL-120	2	9:30	3	111.4	16.6%	0.515	N/A	87.0%	L5	Pass
SL-119B	2	10:40	5	113.2	17.1%	0.489	N/A	94.0%	M5	Pass
SL-121	3	10:45	3	112.3	18.1%	0.501	N/A	98.0%	L4	Pass
SL-122	3	10:50	3	112.0	17.5%	0.505	N/A	94.0%	L3	Pass
SL-123	3	10:55	3	112.3	17.3%	0.501	N/A	93.0%	L2	Pass
SL-124	2	11:00	3	111.6	17.0%	0.510	N/A	90.0%	K2	Pass
SL-125	2	11:05	3	112.2	16.1%	0.502	N/A	87.0%	J2	Pass
SL-126	1	15:20	3	118.8	14.2%	0.419	N/A	92.0%	N5	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-119				
SL-119A				
SL-120				
SL-119B				
SL-121				
SL-122				
SL-123				
SL-124				
SL-125				
SL-126				



/iroteon Engineering & Consulting, Inc

11/11/10
Date

FIELD DENSITY TEST (ASTM D-6938)

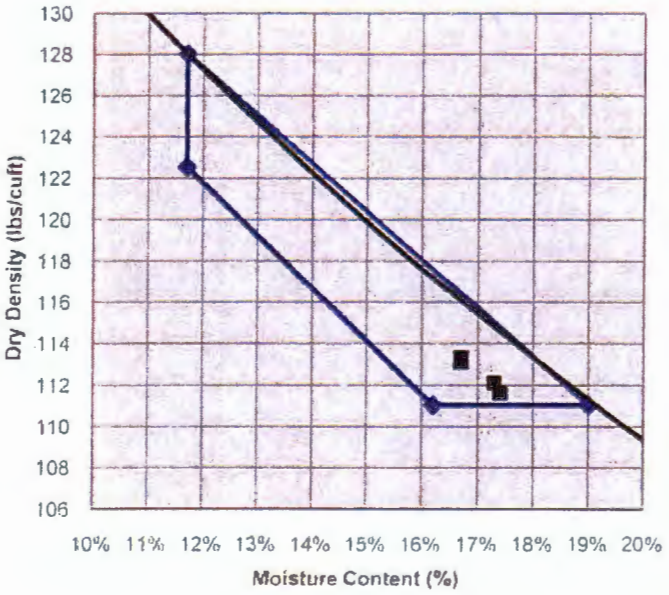
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 5/19/2010
Description: Admix Soil
Report: 05-016-071
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std. 650 Density Std 2245
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-127	1	15:25	3	112.1	17.3%	0.504	N/A	93.0%	O5	Pass
SL-128	1	15:30	3	113.1	16.7%	0.49	N/A	92.0%	P5	Pass
SL-129	2	15:40	3	113.3	16.7%	0.487	N/A	93.0%	M5	Pass
SL-130	2	15:45	3	111.6	17.4%	0.516	18.3%	91.0%	L5	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-127				
SL-128				
SL-129				
SL-130	SC	2406.70	2112.6	505.9



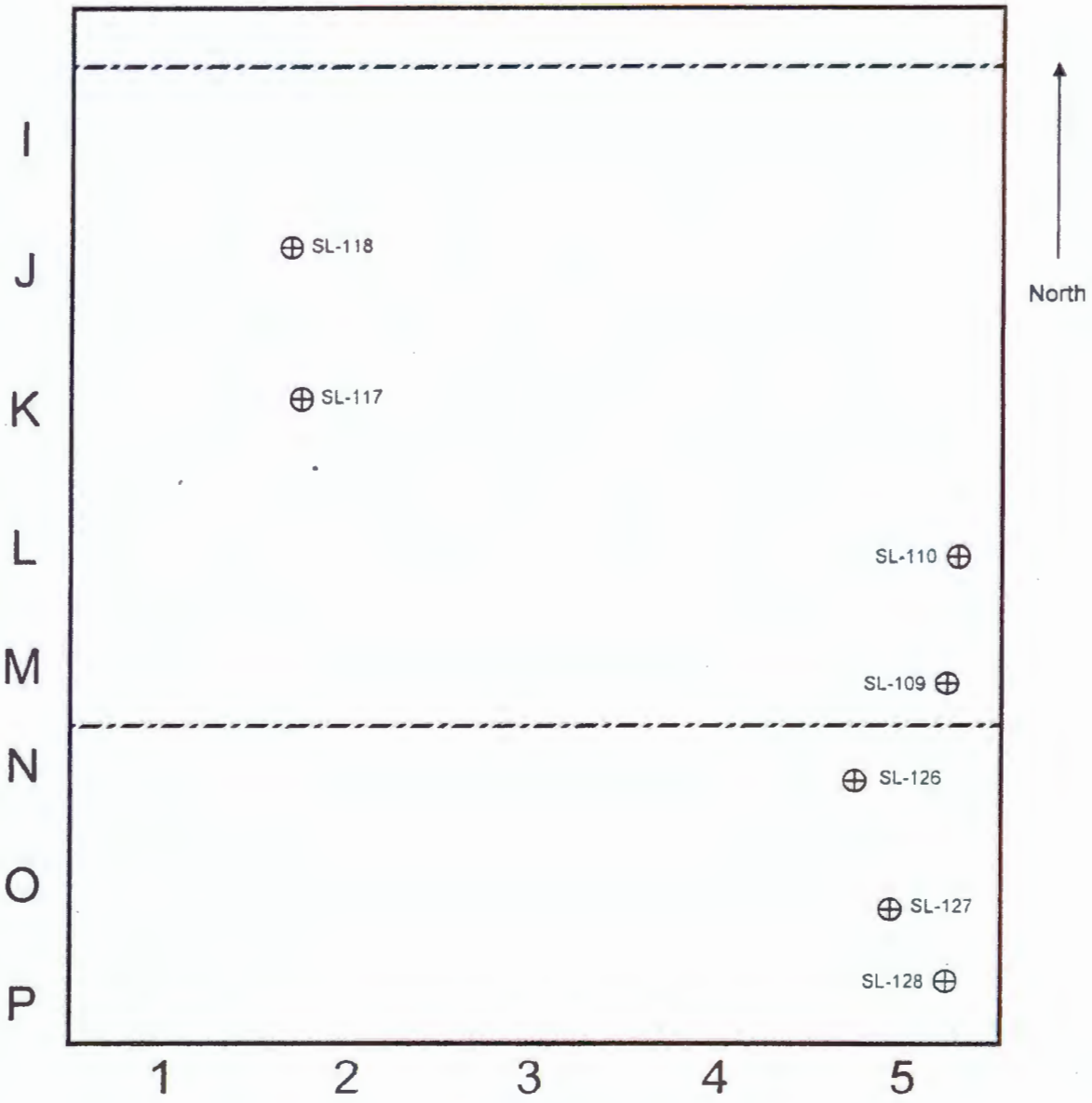
wirotech Engineering & Consulting, Inc

11/11/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

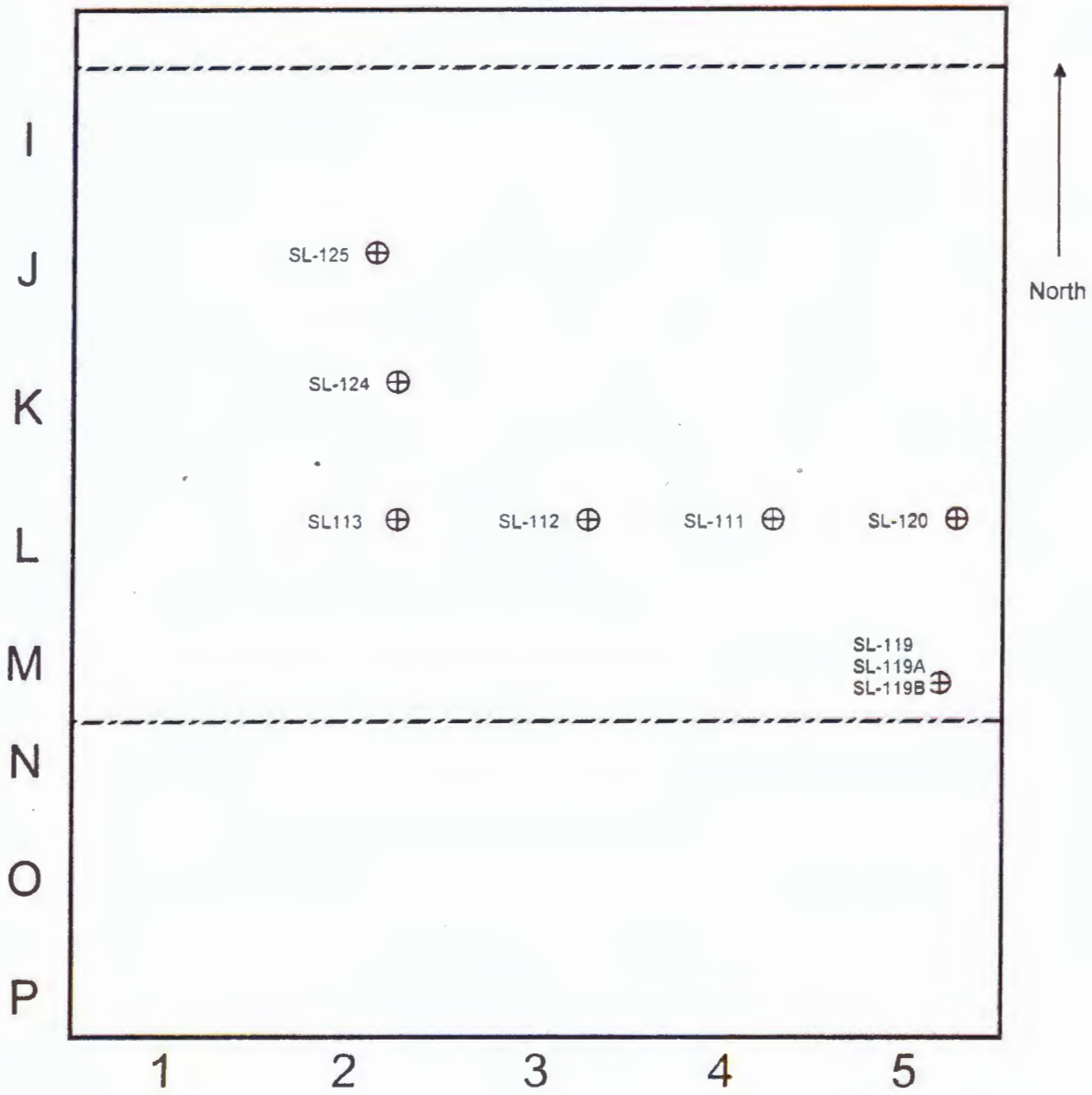
Date:	5/19/2010	Lift:	No. 1
Report:	05-016-071	Operator:	L. Hay
Map No:	1 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

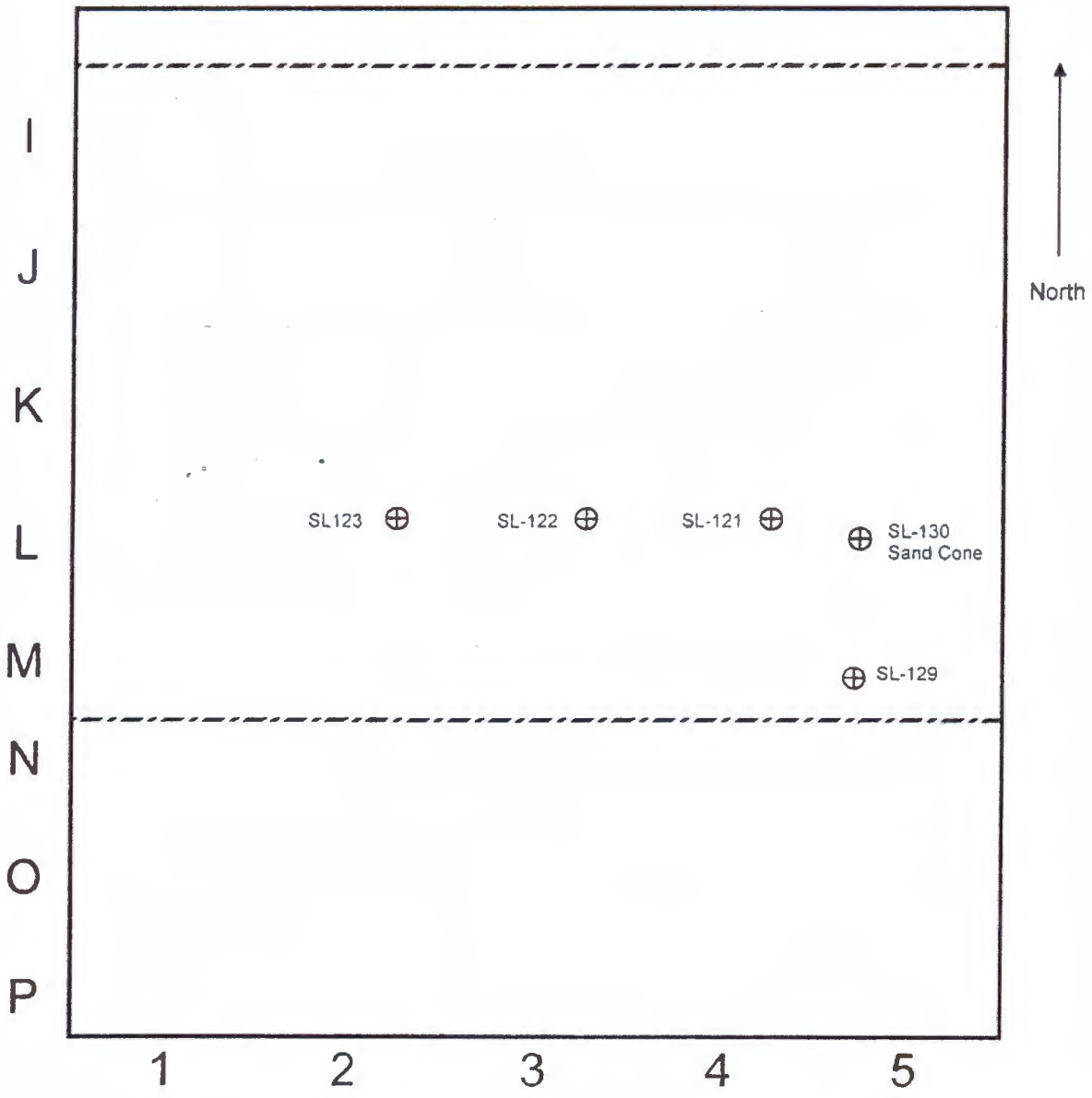
Date:	5/19/2010	Lift:	No. 2
Report:	05-016-071	Operator:	L. Hay
Map No:	2 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

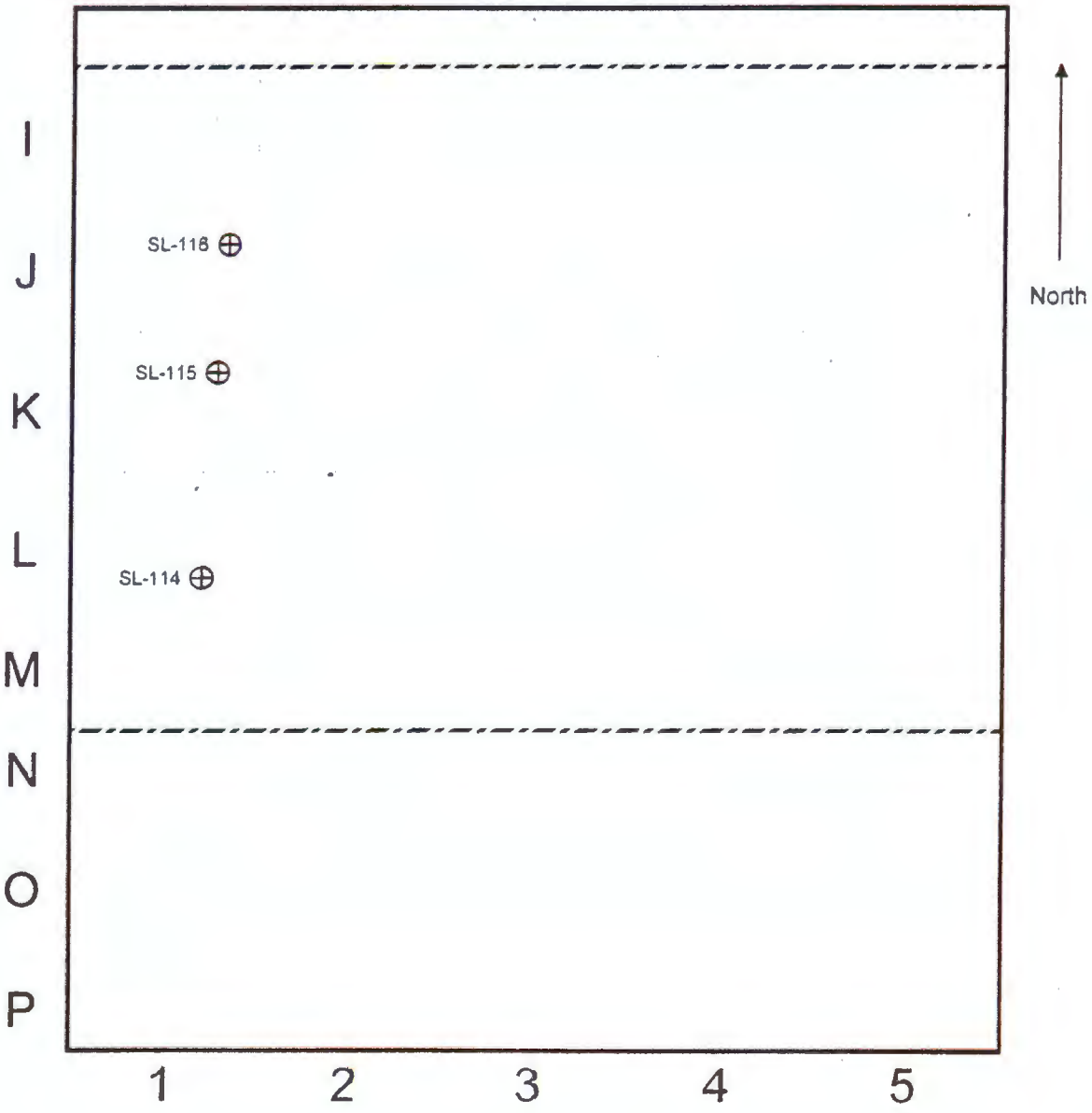
Date:	5/19/2010	Lift:	No. 3
Report:	05-016-071	Operator:	L. Hay
Map No:	3 o3f 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/19/2010	Lift:	No 5
Report:	05-016-071	Operator:	L. Hay
Map No:	4 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-130
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/19/2010
Tested By:	L. Hay	Date:	5/19/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams TW	Date:	5/20/2010	Date Received:	5/19/2010
Comments				Report No.:	05-016-071

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.40 g
2. Mass of Proctor mold + sand, W_2	5391.30 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	94.97 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6664.60 g
6. Mass of bottle + cone + sand (after use), W_4	5029.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	5813.0 g
9. Mass of bottle + cone + sand (after use), W_8	2905.5 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma\, d\,(sand)}$	0.0295 ft^3
11. Mass of gallon can, W_5	505.90 g
12. Mass of gallon can + moist soil, W_7	2406.70 g
13. Mass of gallon can + dry soil, W_9	2112.60 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	141.85 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	18.3%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	119.90 lb/ft^3
17. Comparision moisture content =	17.4%
18. Dry unit weight comparison =	111.6 lb/ft^3

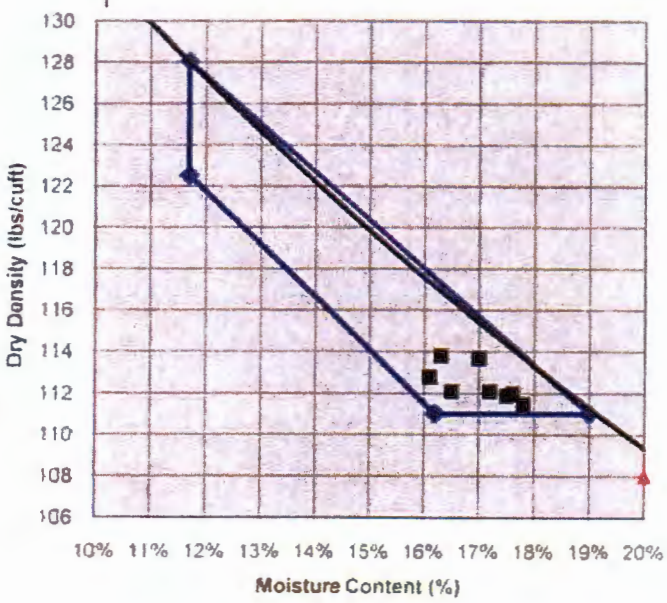
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/20/2010	Moisture Std	648	Density Std	2223
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-072	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-131	3	7:50	3	112.1	17.2%	0.504	N/A	92.0%	K2	Pass
SL-132	3	7:55	3	112.1	16.5%	0.504	N/A	88.0%	J2	Pass
SL-133	4	8:35	3	108.0	20.0%	0.561	N/A	96.0%	L4	Fail
SL-134	4	11:35	3	111.5	17.8%	0.516	N/A	93.0%	M5	Pass
SL-135	4	11:40	3	111.9	17.5%	0.507	N/A	93.0%	L5	Pass
SL-133A	4	11:45	5	112.0	17.6%	0.505	17.9%	94.0%	L4	Pass
SL-136	4	12:00	5	113.8	16.3%	0.482	N/A	91.0%	L3	Pass
SL-137	4	12:05	5	113.7	17.0%	0.482	N/A	95.0%	L2	Pass
SL-138	4	12:10	3	112.8	16.1%	0.494	N/A	88.0%	K2	Pass
SL-139	4	12:15	3	111.5	17.8%	0.512	N/A	94.0%	J2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-131				
SL-132				
SL-133				
SL-134				
SL-135				
SL-133A	SC	2515	2209.7	505.6
SL-136				
SL-137				
SL-138				
SL-139				



Envirotech Engineering & Consulting Inc

5/24/10
Date

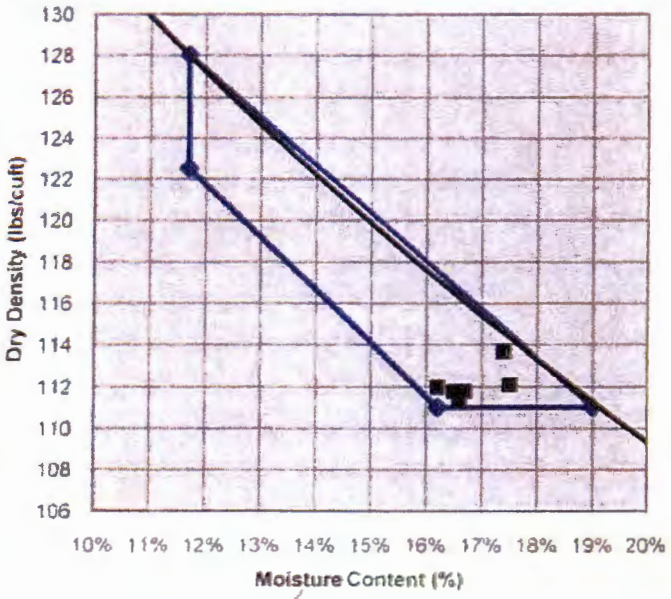
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/19/2010	Moisture Std	650	Density Std	2245
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-071	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-140	1	13:00	3	113.7	17.4%	0.483	N/A	97.0%	I1	Pass
SL-141	5	15:15	3	111.8	16.5%	0.507	N/A	88.0%	M5	Pass
SL-142	5	15:20	3	111.8	16.7%	0.507	N/A	89.0%	L5	Pass
SL-143	5	15:55	3	112.0	16.2%	0.505	N/A	87.0%	L4	Pass
SL-144	5	16:00	3	112.1	17.5%	0.503	N/A	94.0%	L3	Pass
SL-145	5	16:03	3	111.4	16.6%	0.51	N/A	88.0%	L2	Pass
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-140				
SL-141				
SL-142				
SL-143				
SL-144				
SL-145				



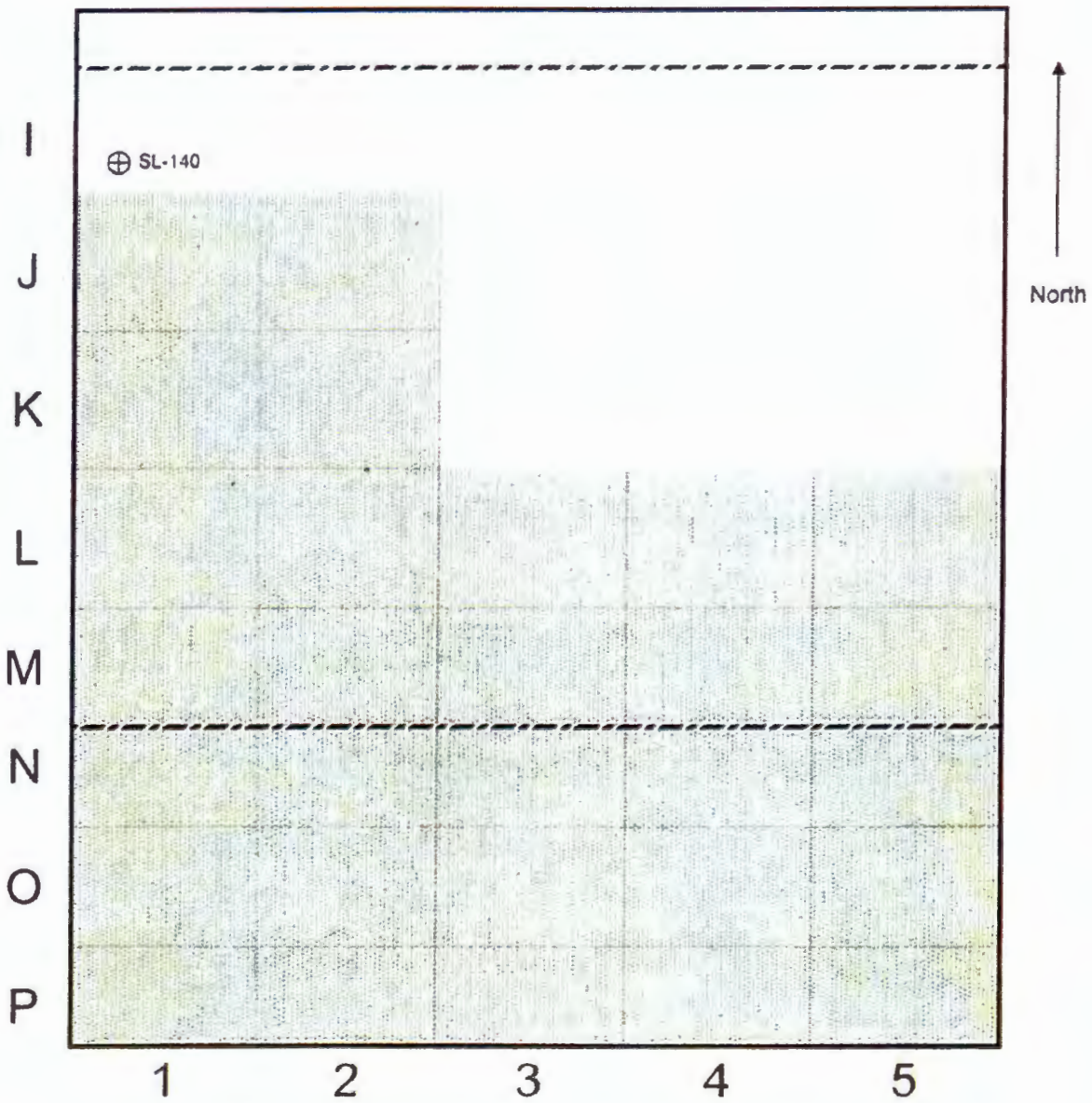
nvirotech Engineering & Consulting Inc

5/24/10
Date

S/C S013213A00

CQA Moisture Density Map Cell 9

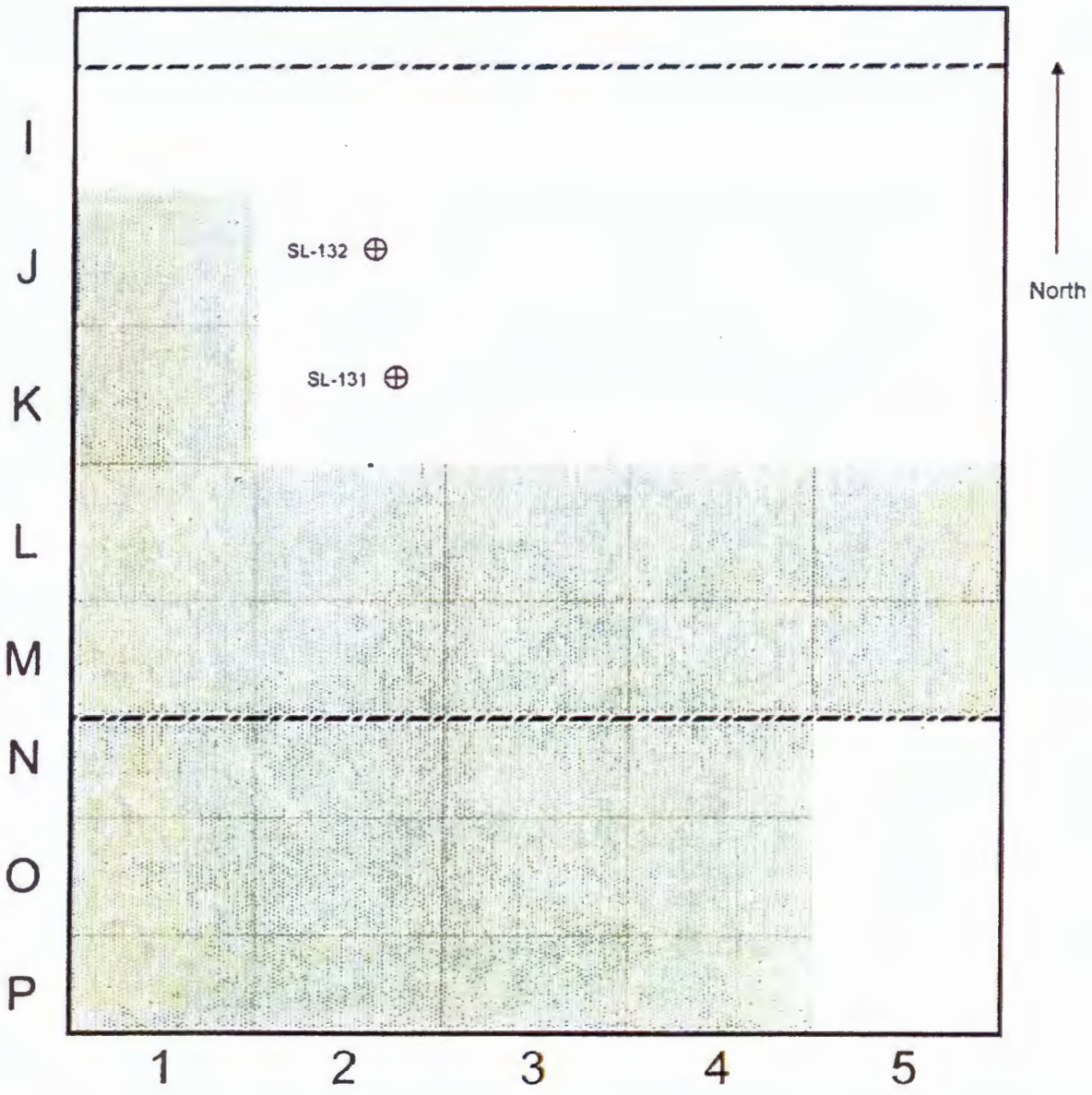
Date	5/20/2010	Lift:	No. 1
Report.	05-016-072	Operator	L. Hay
Map No.	1 of 4	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

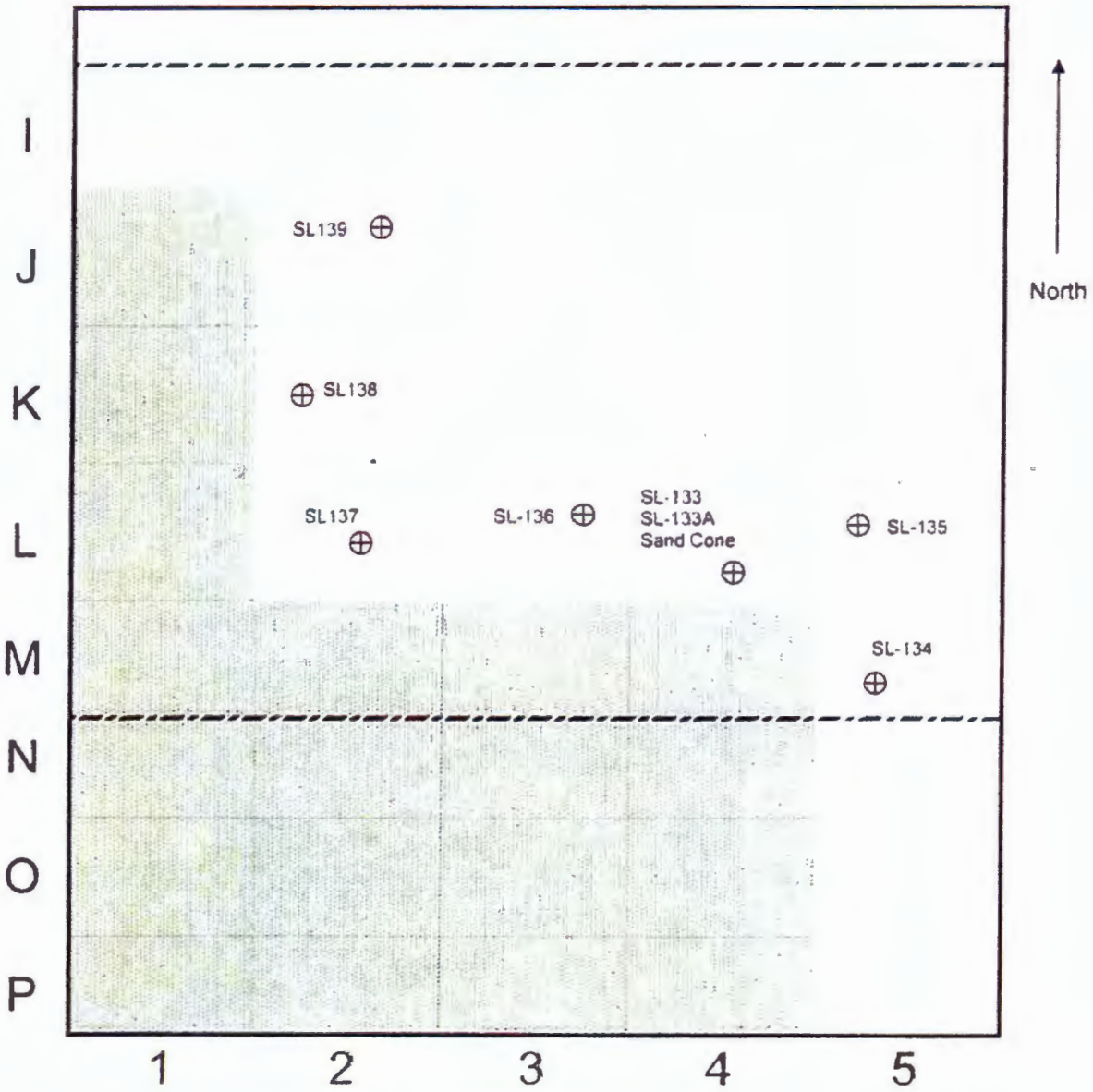
Date	5/20/2010	Lift:	No 3
Report:	05-016-072	Operator:	L. Hay
Map No	2 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

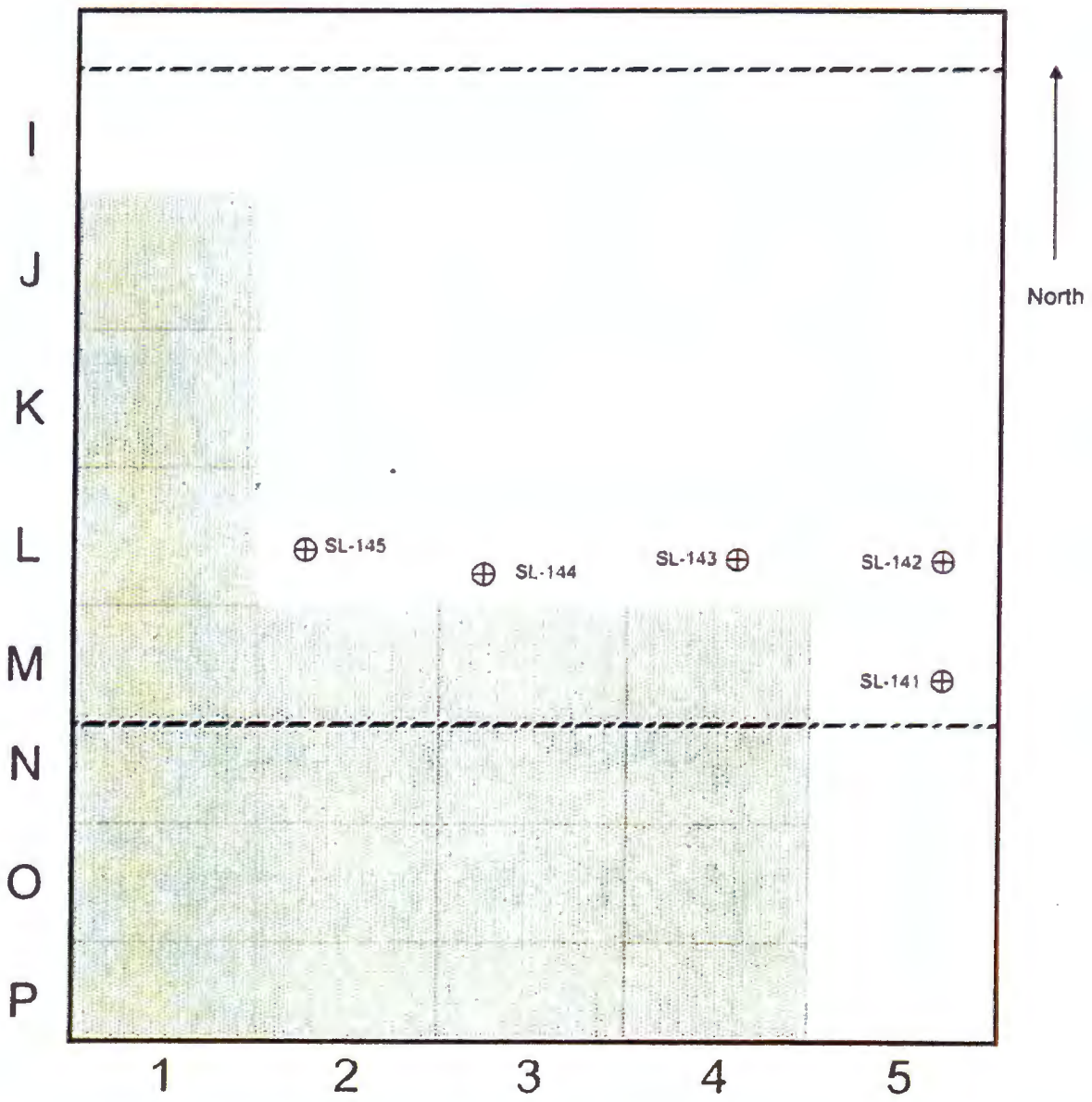
Date	5/20/2010	Lift:	No 4
Report.	05-016-072	Operator	L. Hay
Map No	3 o3f 4	Material	Admix
Grid.	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

Date:	5/19/2010	Lift:	No. 5
Report:	05-016-072	Operator:	L. Hay
Map No:	4 of 4	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, Ok. 73701
580 234 8780 | Fax 580 237 4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID:	SL-133A
Project:	S013213A00			Sample Description	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date	5/20/2010
Tested By	L. Hay	Date	5/20/2010	Sampled By	L. Hay
Reviewed By:	T. Williams TW	Date	5/21/2010	Date Received	5/20/2010
Comments				Report No.	05-016-072

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.60 g
2. Mass of Proctor mold + sand, W_2	5404.60 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.84 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6374.50 g
6. Mass of bottle + cone + sand (after use), W_4	4749.20 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.58 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	5875.7 g
9. Mass of bottle + cone + sand (after use), W_8	2914.8 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0307 ft^3
11. Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2515.00 g
13. Mass of gallon can + dry soil, W_9	2209.70 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	144.18 lb/ft^3
15. Moisture content in the field $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17.9%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	122.28 lb/ft^3
17. Comparision moisture content =	17.6%
18. Dry unit weight comparison =	112.0 lb/ft^3

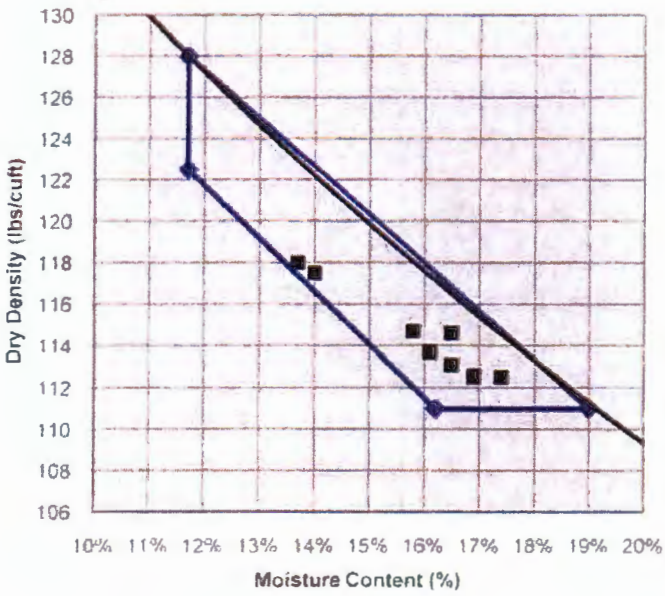
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/20/2010	Moisture Std.	638	Density Stc	2237
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-073	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-146	5	7.30	3	118.0	13.7%	0.429	N/A	86.0%	K2	Pass
SL-147	5	7.35	3	114.6	16.5%	0.471	N/A	95.0%	J2	Pass
SL-148	2	9.05	3	113.1	16.5%	0.49	16.3%	91.0%	I1	Pass
SL-149	6	13.00	3	112.5	17.4%	0.498	N/A	94.0%	J1	Pass
SL-150	6	13.05	3	114.7	15.8%	0.47	N/A	91.0%	K1	Pass
SL-151	6	0.00	5	117.5	14.0%	0.435	N/A	87.0%	L1	Pass
SL-152	6	13.15	5	112.6	16.9%	0.497	N/A	92.0%	L2	Pass
SL-153	6	13.20	5	112.5	16.9%	0.498	N/A	92.0%	K2	Pass
SL-154	6	13:25	3	113.7	16.1%	0.482	N/A	90.0%	J2	Pass
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-146				
SL-147				
SL-148	SC	2523.9	2225	391.6
SL-149				
SL-150				
SL-151				
SL-152				
SL-153				
SL-154				



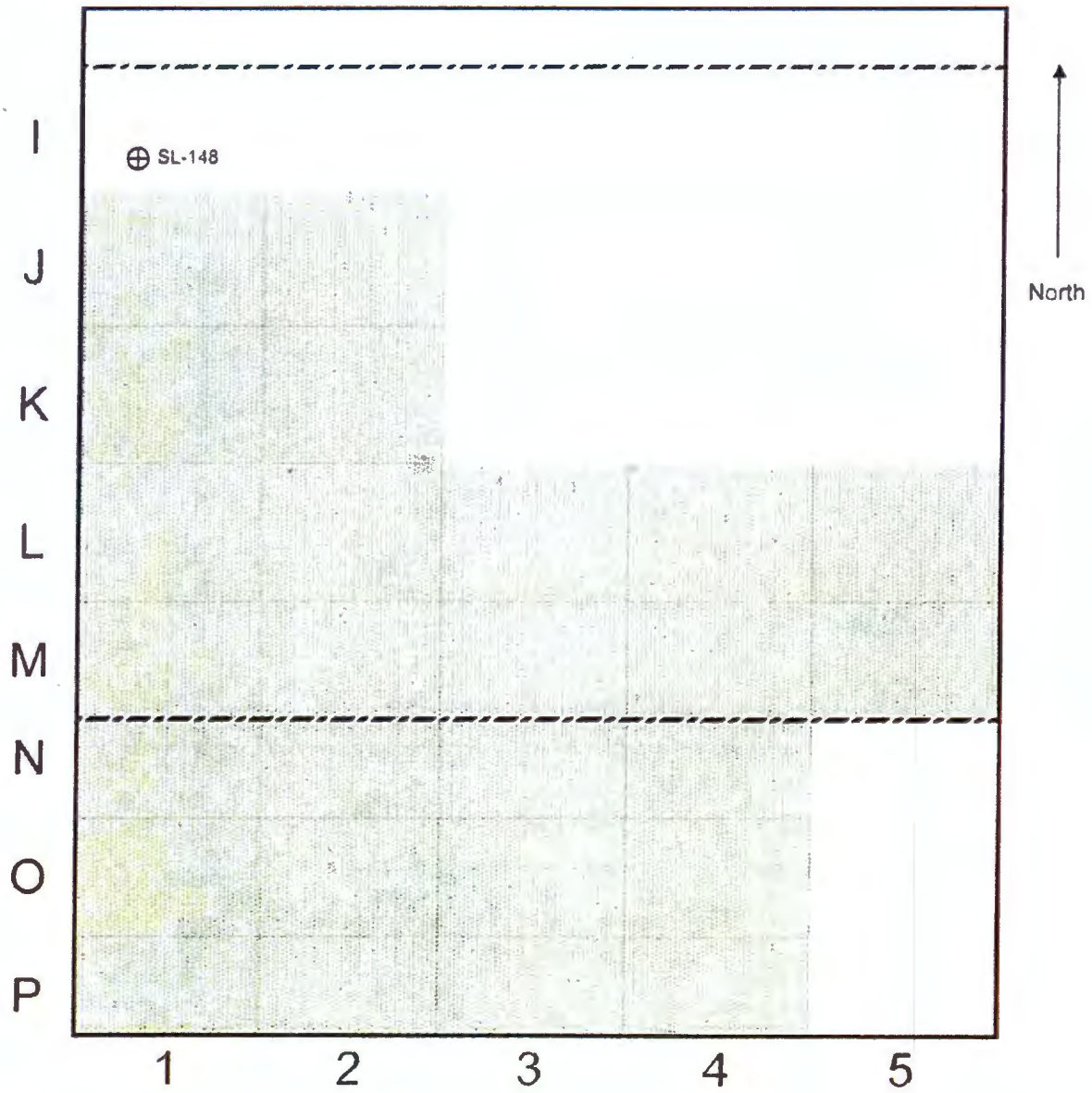
Envirotech Engineering & Consulting Inc

5-25-10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

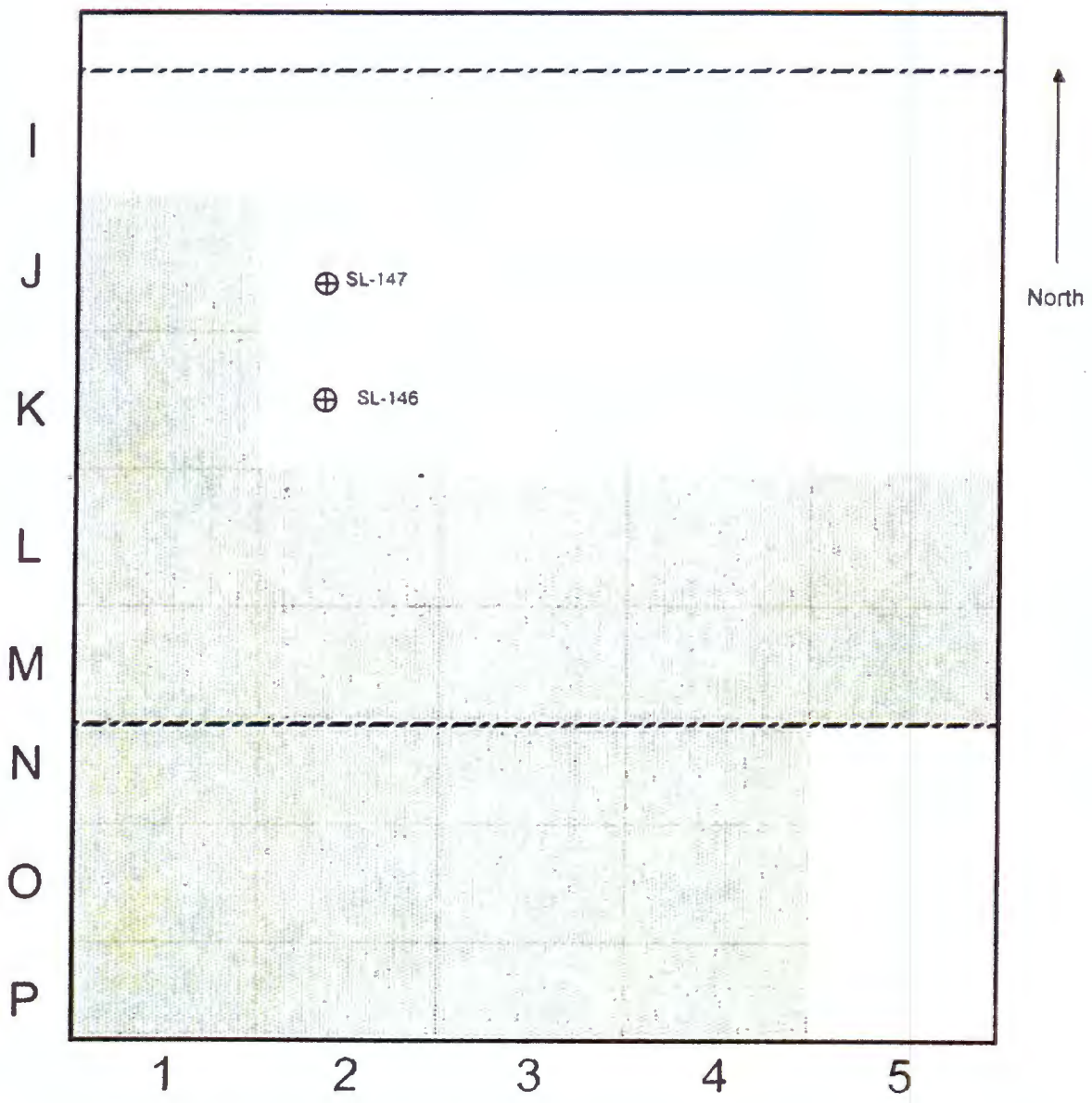
Date	5/21/2010	Lift:	No. 2
Report:	05-016-073	Operator:	L. Hay
Map No.	2 of 4	Material	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

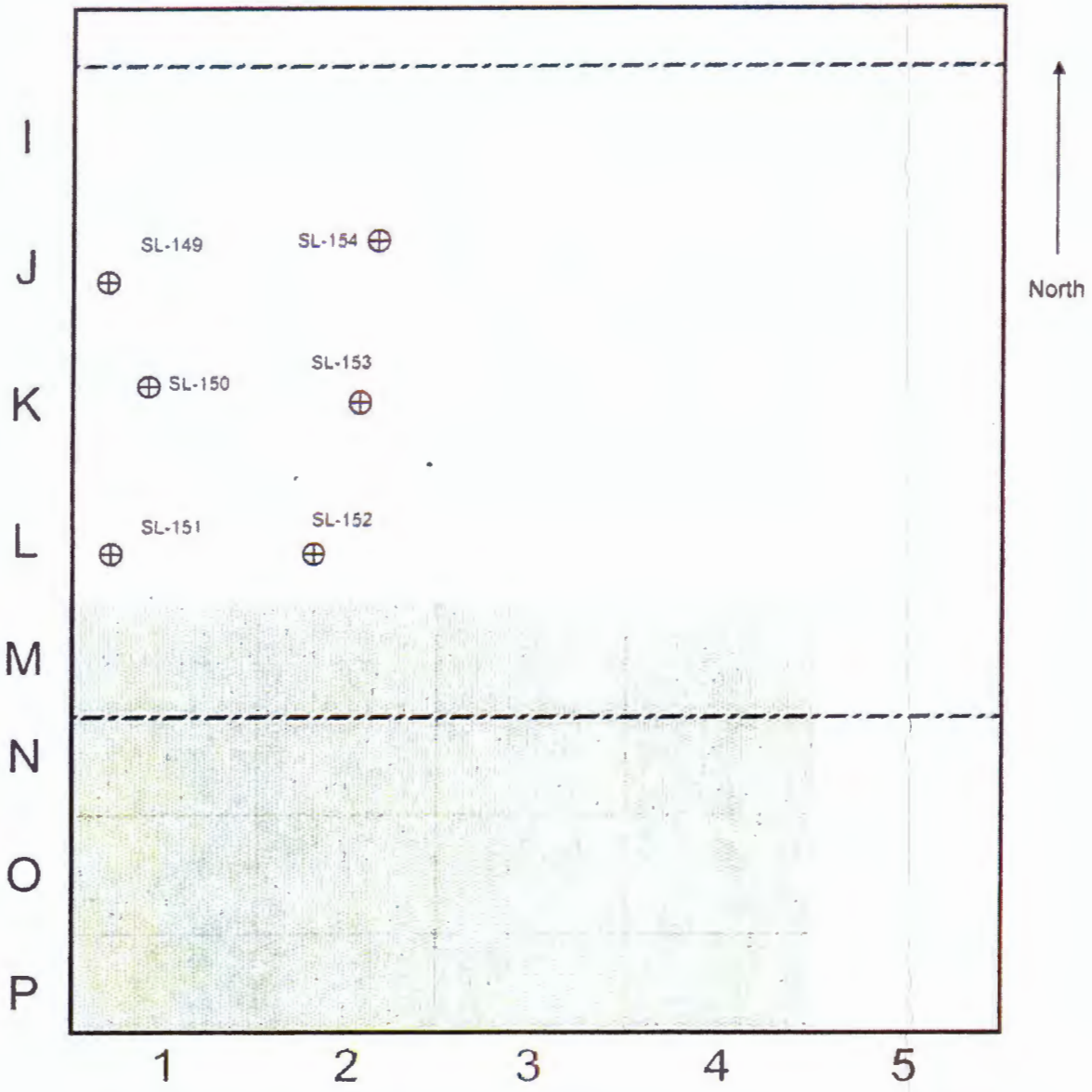
Date	5/21/2010	Lift	No 5
Report	05-016-073	Operator	L. Hay
Map No.	3 of 4	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

Date	5/21/2010	Lift.	No 6
Report.	05-016-073	Operator.	L Hay
Map No	4 of 4	Material	Admix
Grid.	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID.	SL-148
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/21/2010
Tested By:	L. Hay	Date:	5/21/2010	Sampled By:	L. Hay
Reviewed By:	T. Williams TW	Date.	5/24/2010	Date Received:	5/21/2010
Comments				Report No.:	05-016-073

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.60 g
2. Mass of Proctor mold + sand, W_2	5404.60 g
3. Volume of mold, V_1	0.03 ft
4 Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.84 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6374.50 g
6. Mass of bottle + cone + sand (after use), W_4	4749.20 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.58 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6365.6 g
9. Mass of bottle + cone + sand (after use), W_8	3249.1 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma\, d\,(sand)}$	0.0343 ft^3
11. Mass of gallon can, W_5	391.60 g
12. Mass of gallon can + moist soil, W_7	2523.90 g
13. Mass of gallon can + dry soil, W_9	2225.00 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	137.04 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.3%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	117.83 lb/ft^3
17. Comparision moisture content =	16.5%
18. Dry unit weight comparison =	113.1 lb/ft^3

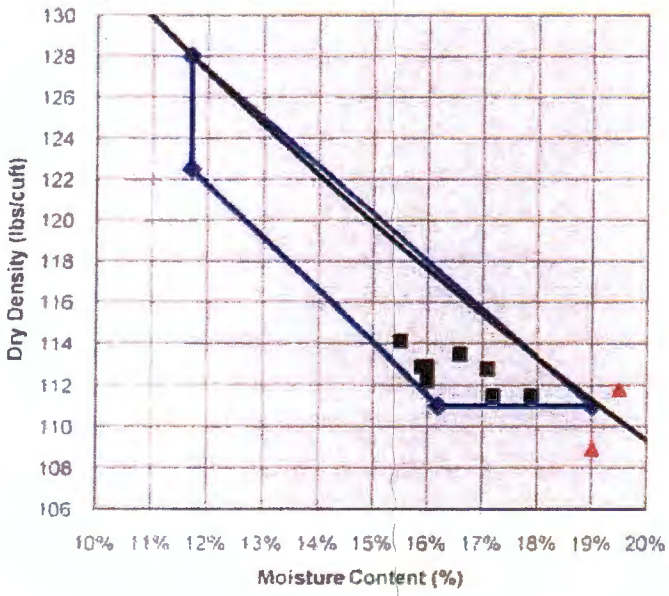
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/24/2010	Moisture Std	641	Density Std	2219
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-074	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-155	6	7:45	3	113.5	16.6%	0.485	N/A	92.0%	L3	Pass
SL-156	6	7:50	3	112.9	16.0%	0.494	N/A	87.0%	L4	Pass
SL-157	6	8:35	3	114.1	15.5%	0.478	14.7%	88.0%	M5	Pass
SL-158	6	8:45	3	111.5	17.2%	0.514	N/A	90.0%	L5	Pass
SL-159	1	10:28	3	111.5	17.9%	0.512	N/A	94.0%	K5	Pass
SL-160	1	10:30	3	112.9	15.9%	0.493	N/A	87.0%	K4	Pass
SL-161	1	10:35	3	111.8	19.5%	0.547	N/A	96.0%	K3	Fail
SL-161A	1	10:36	3	108.9	19.0%	0.547	N/A	94.0%	K3	Fail
SL-162	1	10:40	3	112.2	16.0%	0.503	N/A	86.0%	J3	Pass
SL-163	1	10:50	3	112.8	17.1%	0.494	N/A	93.0%	J4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-155				
SL-156				
SL-157	SC	2156.8	1944.8	505.6
SL-158				
SL-159				
SL-160				
SL-161				
SL-161A				
SL-162				
SL-163				



Envirotech Engineering & Consulting, Inc

5/26/10

Date

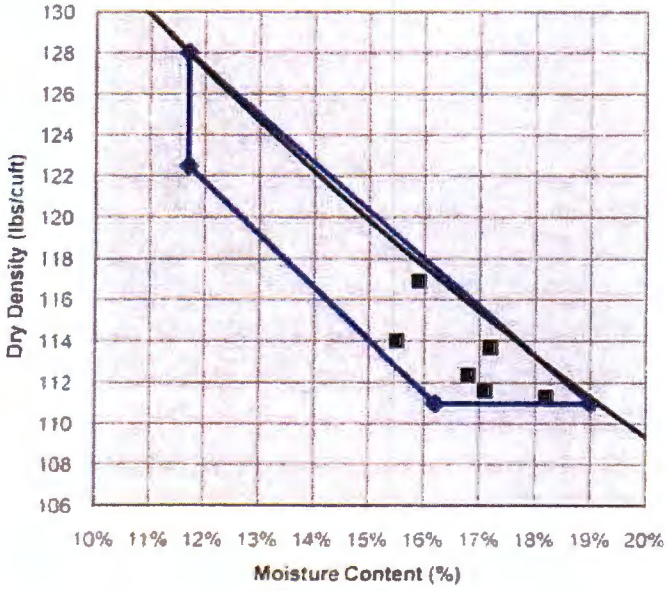
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/24/2010	Moisture Std	641	Density Stc	2219
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-074	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-164	1	10 55	3	112.4	16.8%	0.5	N/A	91.0%	J5	Pass
SL-165	3	12 15	3	111.6	17.1%	0.511	N/A	90.0%	I1	Pass
SL-161B	1	12.30	5	114.0	15.5%	0.489	N/A	86.0%	K3	Pass
SL-166	2	15:05	3	113.7	17.2%	0.483	N/A	96.0%	N5	Pass
SL-167	2	15 15	3	116.9	15.9%	0.441	N/A	97.0%	O5	Pass
SL-168	2	15:20	3	111.3	18.2%	0.538	N/A	91.0%	P5	Pass
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-164				
SL-165				
SL-161B				
SL-166				
SL-167				
SL-168				



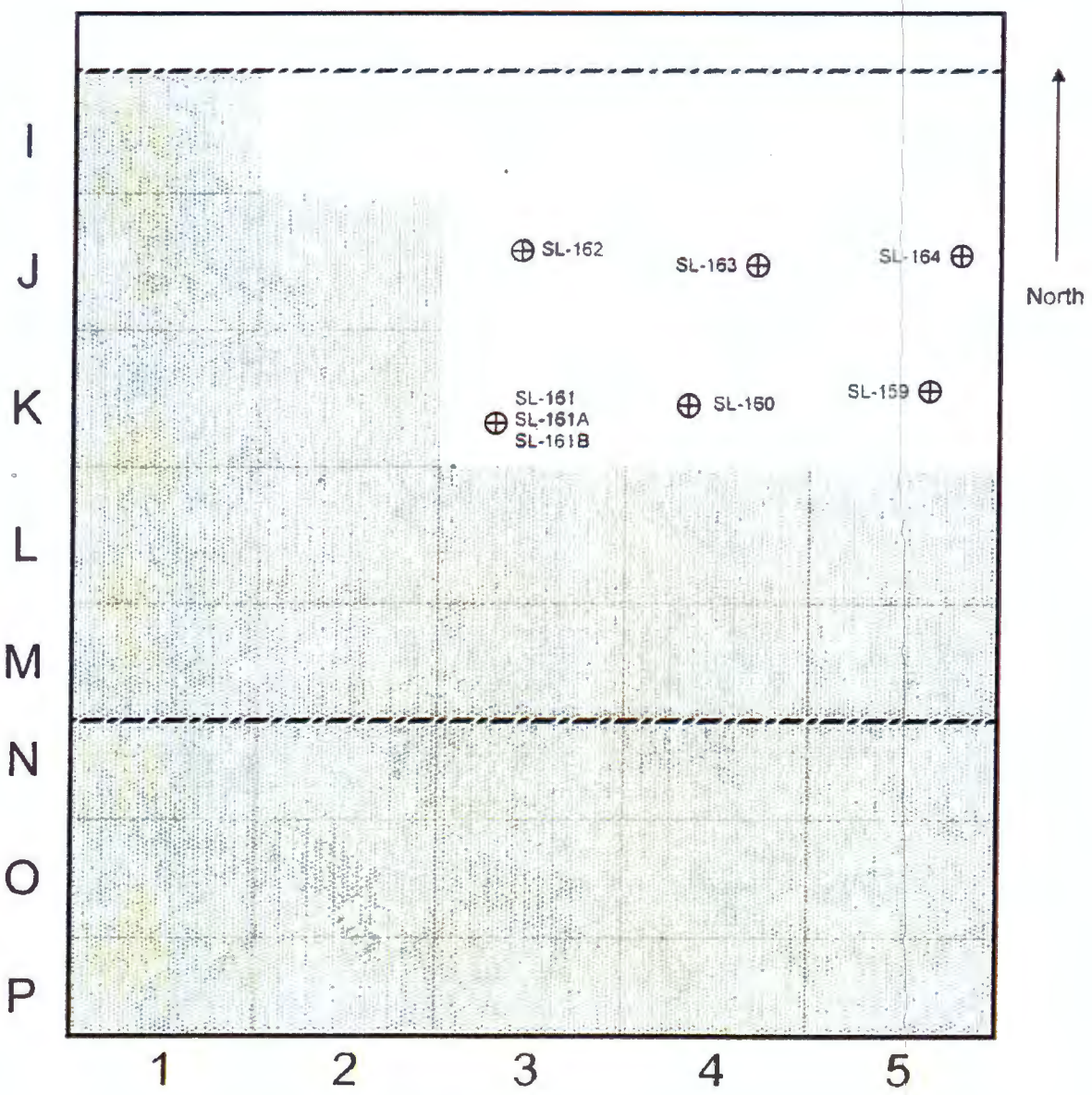
Envirotech Engineering & Consulting Inc

5/26/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

Date	5/24/2010	Lift:	No 1
Report:	05-016-074	Operator:	L. Hay
Map No.	3 of 6	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	

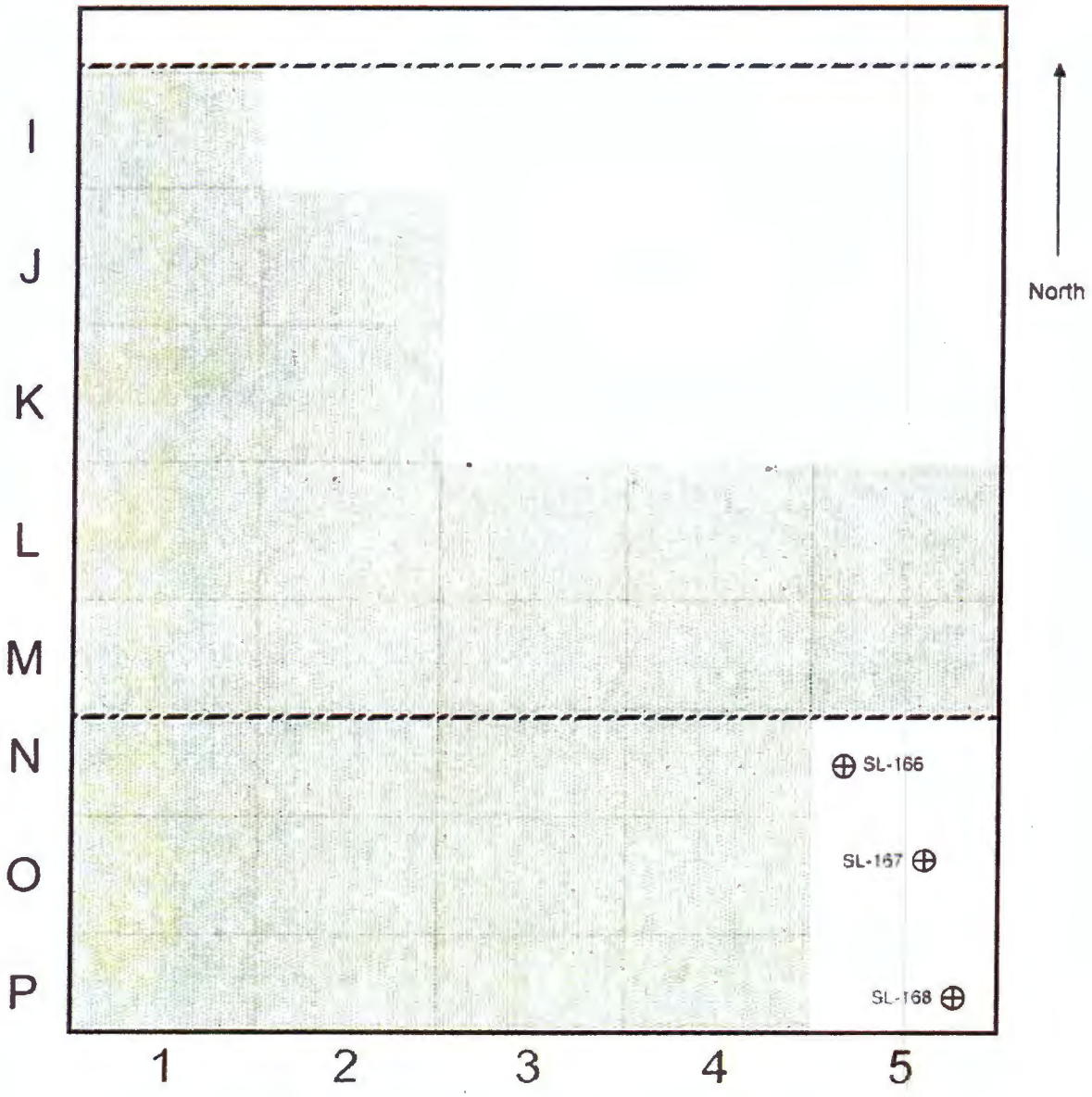


S/C S013213A00

CQA Moisture Density Map Cell 9

05-016-074

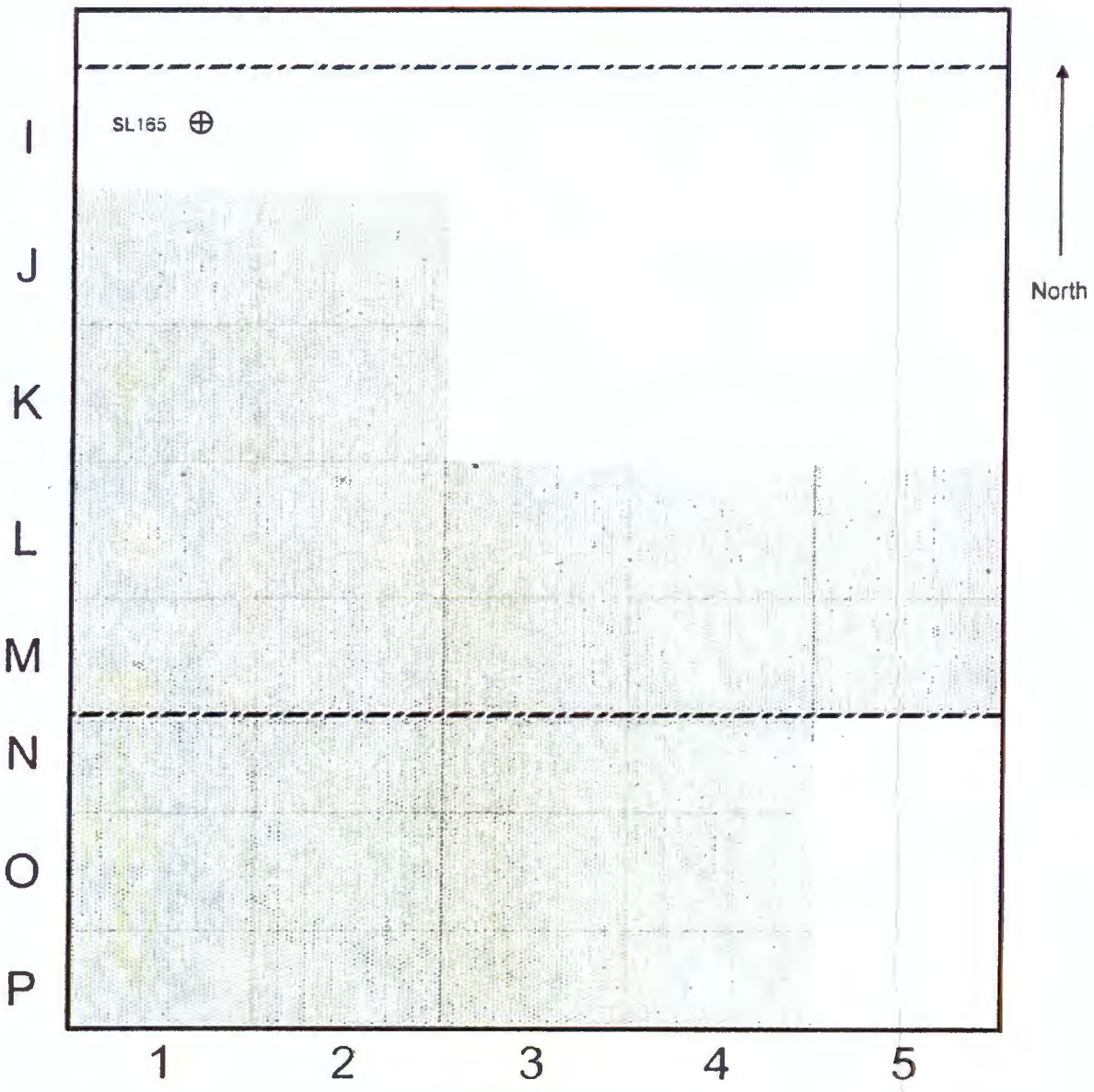
Date	5/24/2010	Lift	No 2
Report	05-016-074	Operator	L. Hay
Map No.	3 of 6	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	5/24/2010	Lift:	No. 3
Report:	05-016-074	Operator:	L. Hay
Map No.	5 of 6	Material:	Admix
Grid	95-ft x 90-ft	Notes:	

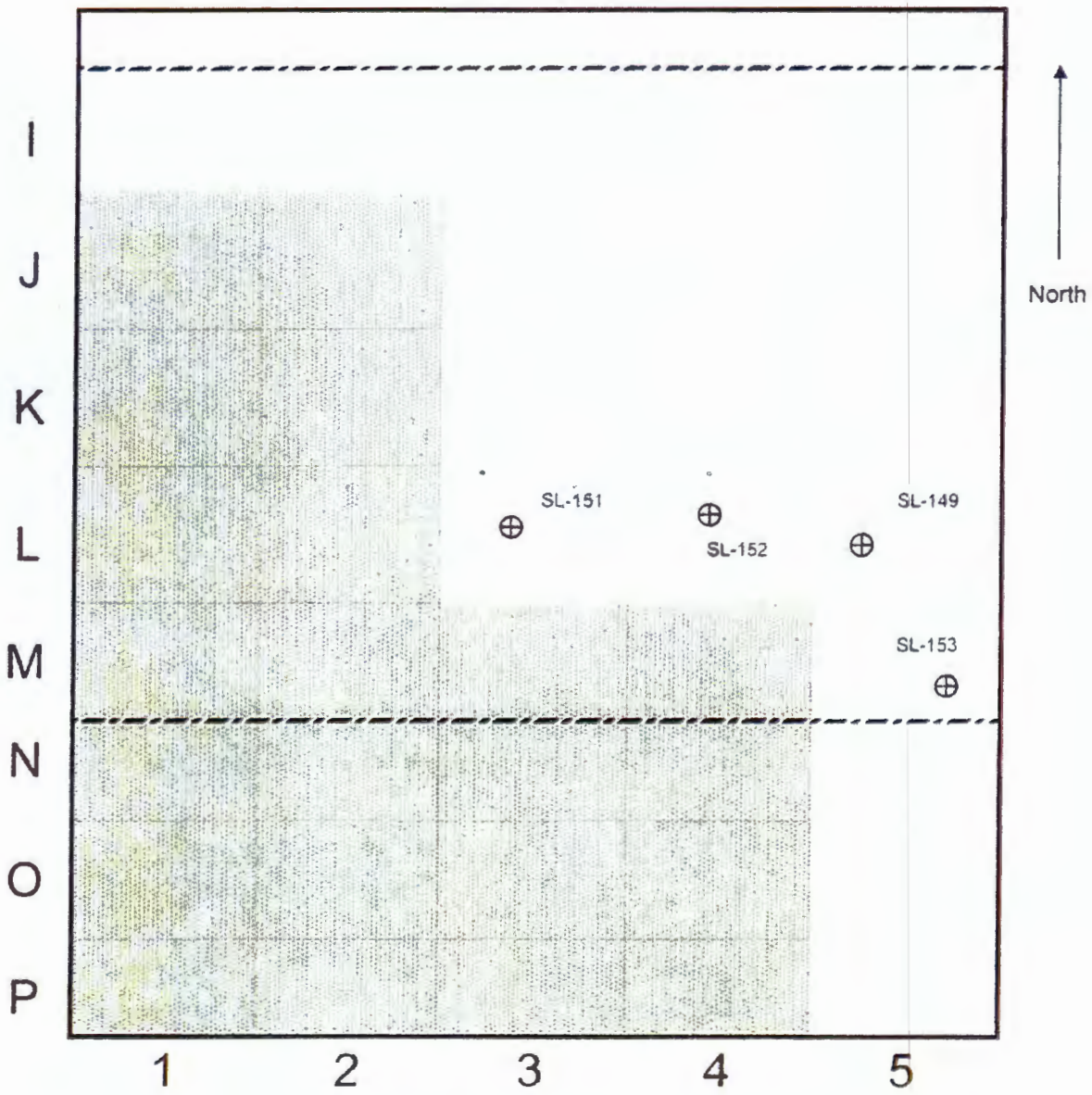


S/C. S013213A00

CQA Moisture Density Map Cell 9

05-016-074

Date.	5/19/2010	Lift.	No. 6
Report:	05-016-074	Operator:	L. Hay
Map No:	6 of 6	Material.	Admix
Grid.	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580.234.8780 | Fax 580.237.4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID	SL-157
Project	S013213A00			Sample Description	Admix Soil
Project Location	ERDF Cells 9-10			Sampling Date	5/24/2010
Tested By	L. Hay	Date	5/24/2010	Sampled By	L. Hay
Reviewed By	T. Williams TW	Date	5/25/2010	Date Received	5/24/2010
Comments				Report No	05-016-074

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.60 g
2 Mass of Proctor mold + sand, W_2	5404.60 g
3 Volume of mold, V_1	0.03 ft
4 Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.84 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6374.50 g
6. Mass of bottle + cone + sand (after use), W_4	4749.20 g
7 Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.58 lb

Results from Field Tests

8 Mass of bottle + cone + sand (before use), W_6	6080.6 g
9. Mass of bottle + cone + sand (after use), W_8	3266.7 g
10 Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{d\,(sand)}$	0.0273 ft^3
11 Mass of gallon can, W_5	505.60 g
12 Mass of gallon can + moist soil, W_7	2156.80 g
13 Mass of gallon can + dry soil, W_9	1944.80 g
14 Moist unit weight of soil in field, $= W_7 - W_5 / V_2$	133.13 lb/ft^3
15 Moisture content in the field $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	14.7%
16 Dry unit weight in the field, $_{d\,(sand)} =$ / (1+(w (%)/100)	116.04 lb/ft^3
17. Comparision moisture content =	15.5%
18. Dry unit weight comparison =	114.1 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

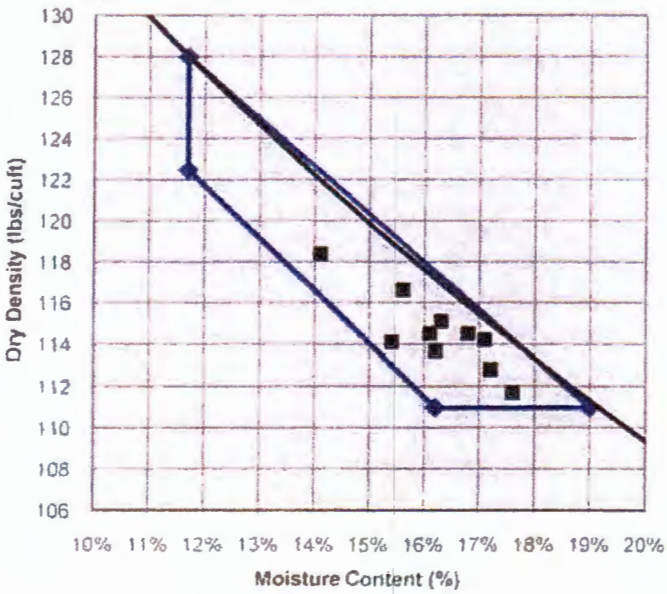
ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/25/2010	Moisture Std	644	Density Std	2252
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-075	Acceptable Zone			

Comments: Unless otherwise stated - All test at taken at a depth of 6-in.
2 Standard Counts were taken to standardize the gauge to the admix

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-169	2	7:10	3	111.7	17.6%	0.509	16.6%	93.0%	K5	Pass
SL-170	2	7:15	3	114.5	16.8%	0.472	N/A	96.0%	K4	Pass
SL-171	2	7:20	3	114.2	17.1%	0.476	N/A	97.0%	K3	Pass
SL-172	2	7:25	3	115.1	16.3%	0.465	N/A	95.0%	J3	Pass
SL-173	2	7:30	3	114.1	15.4%	0.478	N/A	87.0%	J4	Pass
SL-174	2	7:35	3	112.8	17.2%	0.494	TBD	94.0%	J5	Pass
SL-175	1	8:05	3	116.6	15.6%	0.445	N/A	95.0%	I2	Pass
SL-176	4	8:10	3	118.4	14.1%	0.424	TBD	90.0%	I1	Pass
SL-177	3	9:50	3	114.5	16.1%	0.473	TBD	92.0%	P5	Pass
SL-178	3	10:10	3	113.7	16.2%	0.483	N/A	91.0%	O5	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-169	SC	2063.7	1841.6	505.6
SL-170				
SL-171				
SL-172				
SL-173				
SL-174	Shl Tube	TBD	TBD	TBD
SL-175				
SL-176	Shl Tube	TBD	TBD	TBD
SL-177	Shl Tube	TBD	TBD	TBD
SL-178				



Envirotech Engineering & Consulting, Inc

5-27-2010
Date

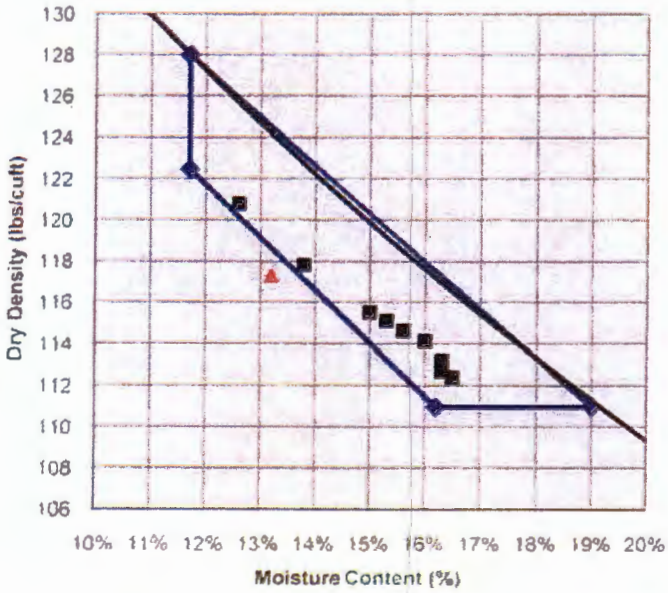
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/25/2010	Moisture Std	644	Density Std	2252
Description	Admix Soil	Offsets.	Moisture -	Density -	
Report	05-016-075	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				
	2 Standard Counts were taken to standardize the gauge to the admix				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-179	3	10 15	3	113.2	16.3%	0.489	N/A	90 0%	N5	Pass
SL-180	3	12:00	3	114.6	15.6%	0.471	N/A	89 0%	J3	Pass
SL-181	3	12:05	3	114.1	16.0%	0.477	N/A	91.0%	J4	Pass
SL-182	3	12:10	3	117.3	13.2%	0.436	N/A	82.0%	J5	Fail
SL-182A	3	12 20	5	115.5	15.0%	0.459	N/A	88 0%	J5	Pass
SL-183	3	12:25	3	112.4	16.5%	0.500	N/A	89.0%	K5	Pass
SL-184	3	12:30	3	112.7	16.3%	0.495	N/A	89.0%	K4	Pass
SL-185	3	12:35	3	117.8	13.8%	0.431	N/A	86.0%	K3	Pass
SL-186	3	13:15	3	120.8	12.6%	0.396	N/A	86.0%	I2	Pass
SL-187	5	13:20	3	115.1	15.3%	0.465	N/A	89.0%	I1	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-179				
SL-180				
SL-181				
SL-182				
SL-182A				
SL-183				
SL-184				
SL-185				
SL-186				
SL-187				



nvirotech Engineering & Consulting, Inc

5-27-2010
Date

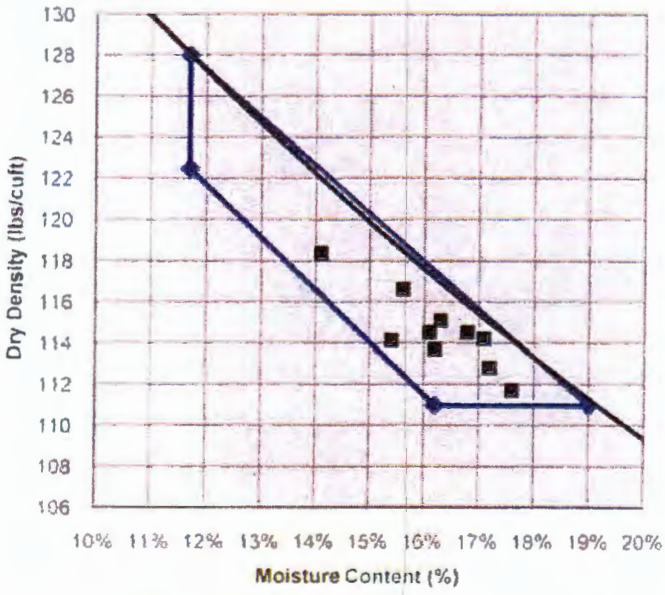
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/25/2010	Moisture Std	644	Density Std	2252
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-075	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				
	2 Standard Counts were taken to standardize the gauge to the admix.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-188	4	15:25	3	113.6	16.1%	0.484	N/A	90.0%	P5	Pass
SL-189	4	15:30	3	111.6	16.9%	0.513	N/A	89.0%	O5	Pass
SL-190	4	15:35	3	115.0	15.7%	0.465	N/A	91.0%	N5	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-188				
SL-189				
SL-190				



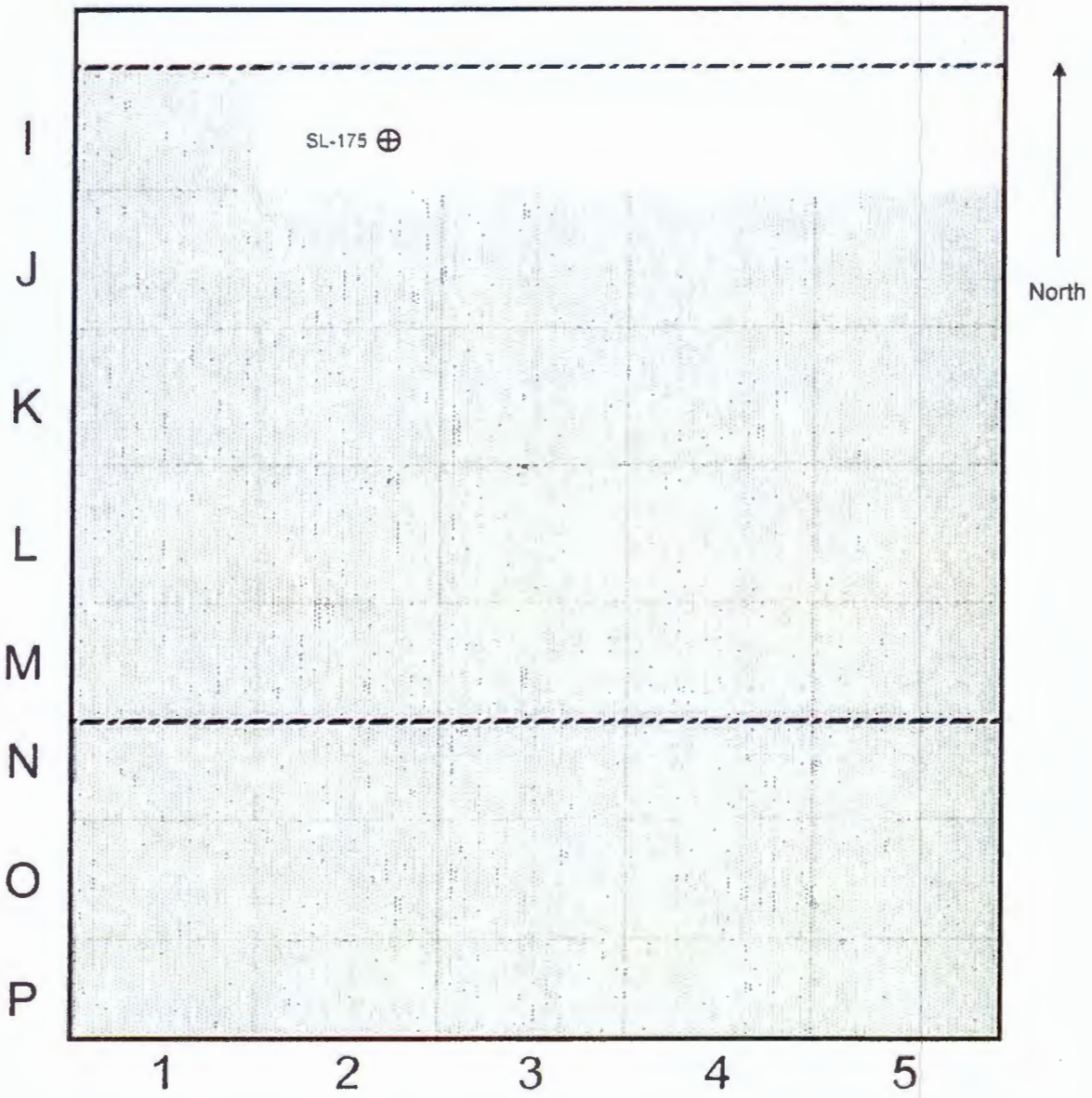
Envirotech Engineering & Consulting Inc

5-27-2010
Date

S/C S013213A00

CQA Moisture Density Map Cell 9

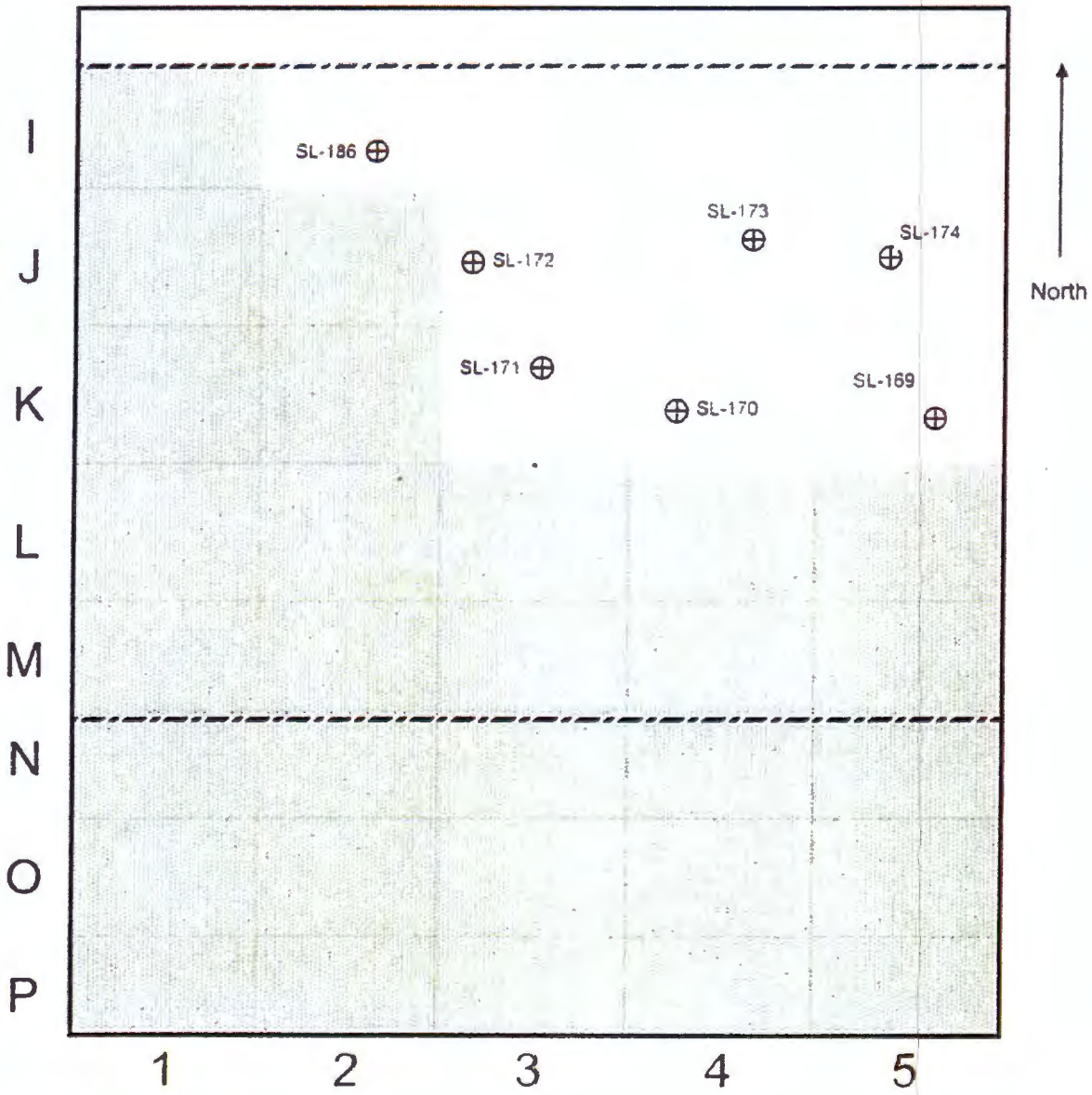
Date:	5/25/2010	Lift	No 1
Report:	05-016-075	Operator:	L. Hay
Map No:	1 of 5	Material	Admix
Grid	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

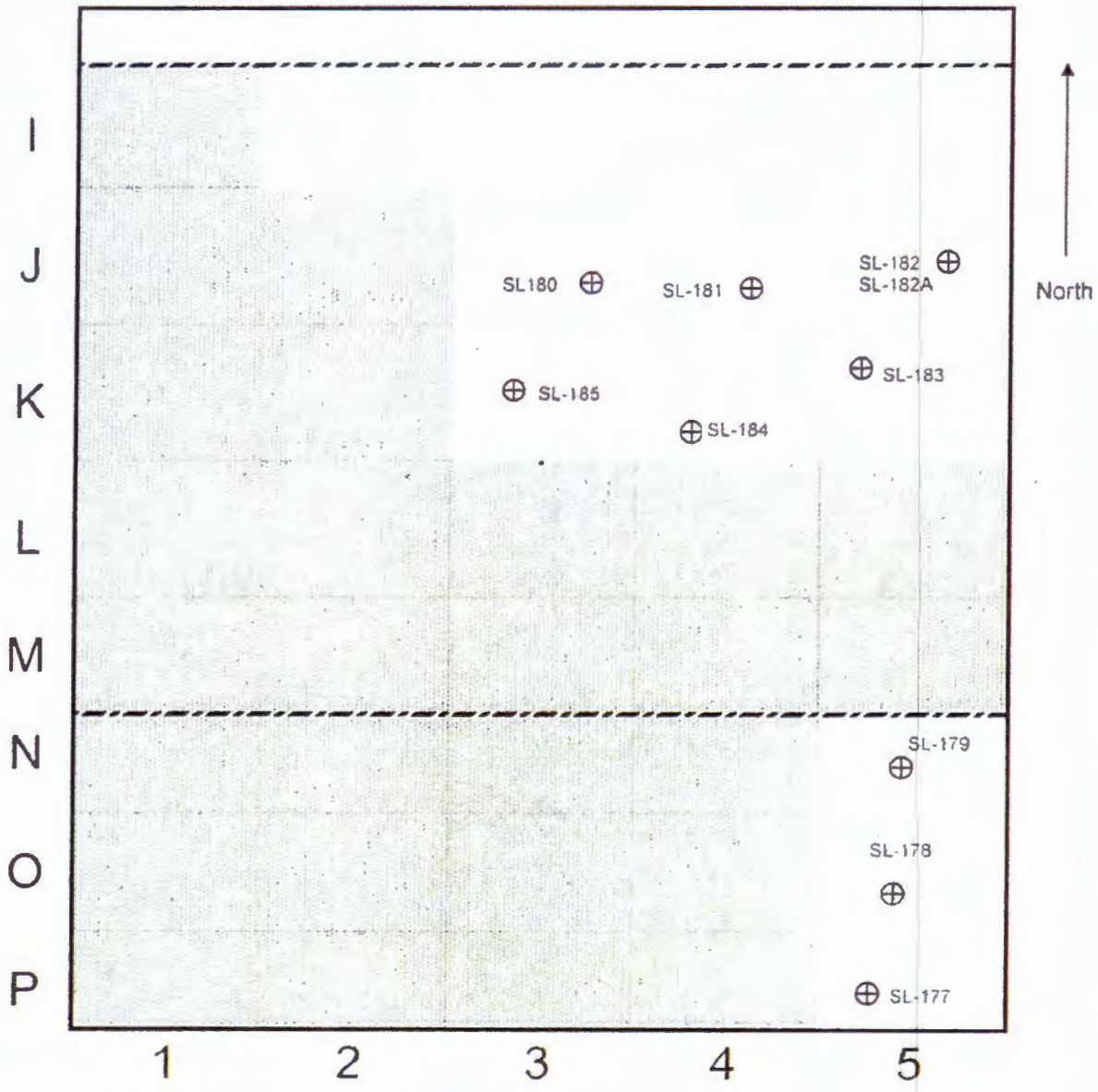
Date.	5/25/2010	Lift.	No 2
Report	05-016-075	Operator	L. Hay
Map No	2 of 5	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

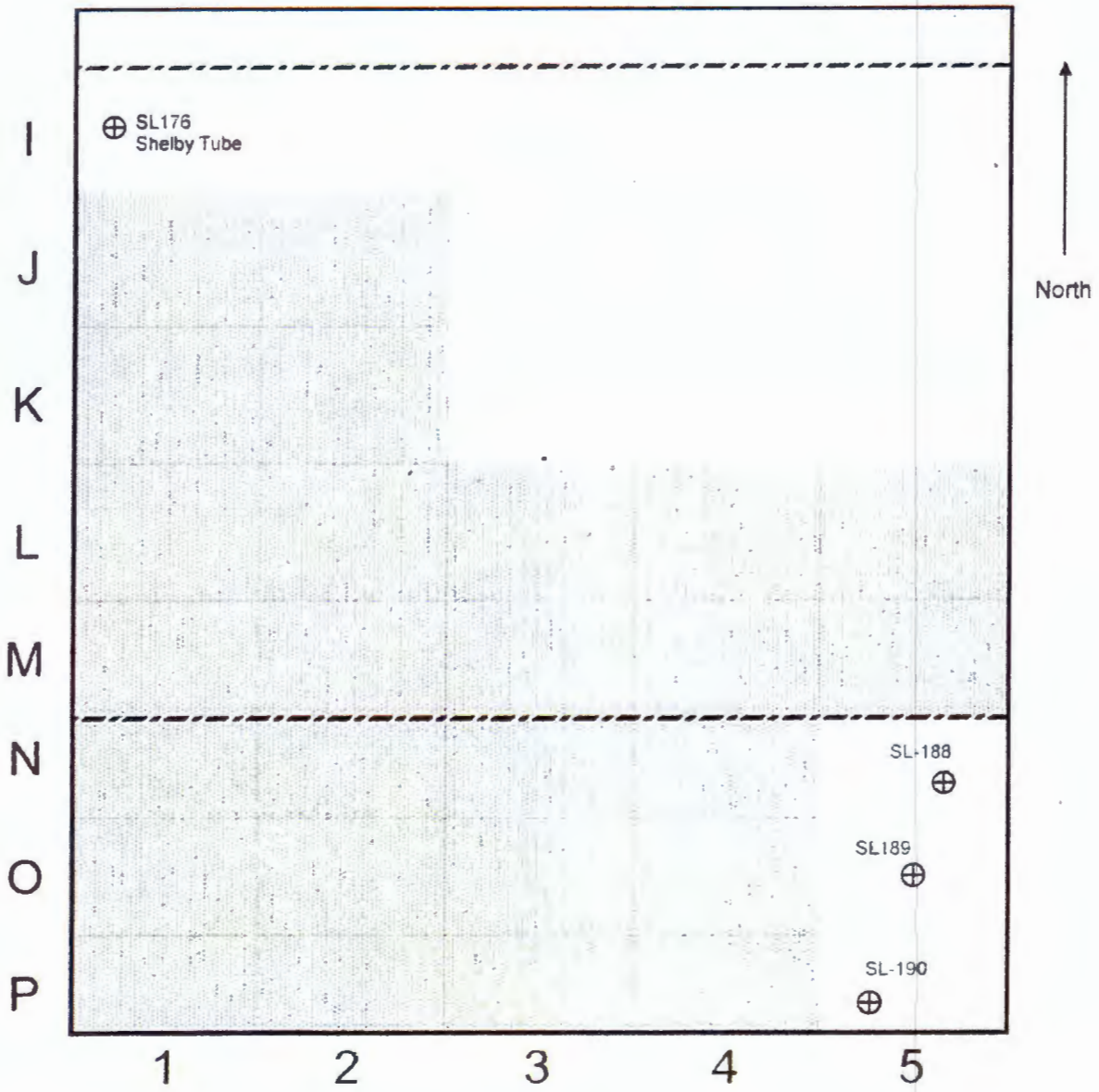
Date:	5/25/2010	Lift:	No 3
Report:	05-016-075	Operator:	L. Hay
Map No.	3 of 5	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C. S013213A00

CQA Moisture Density Map Cell 9

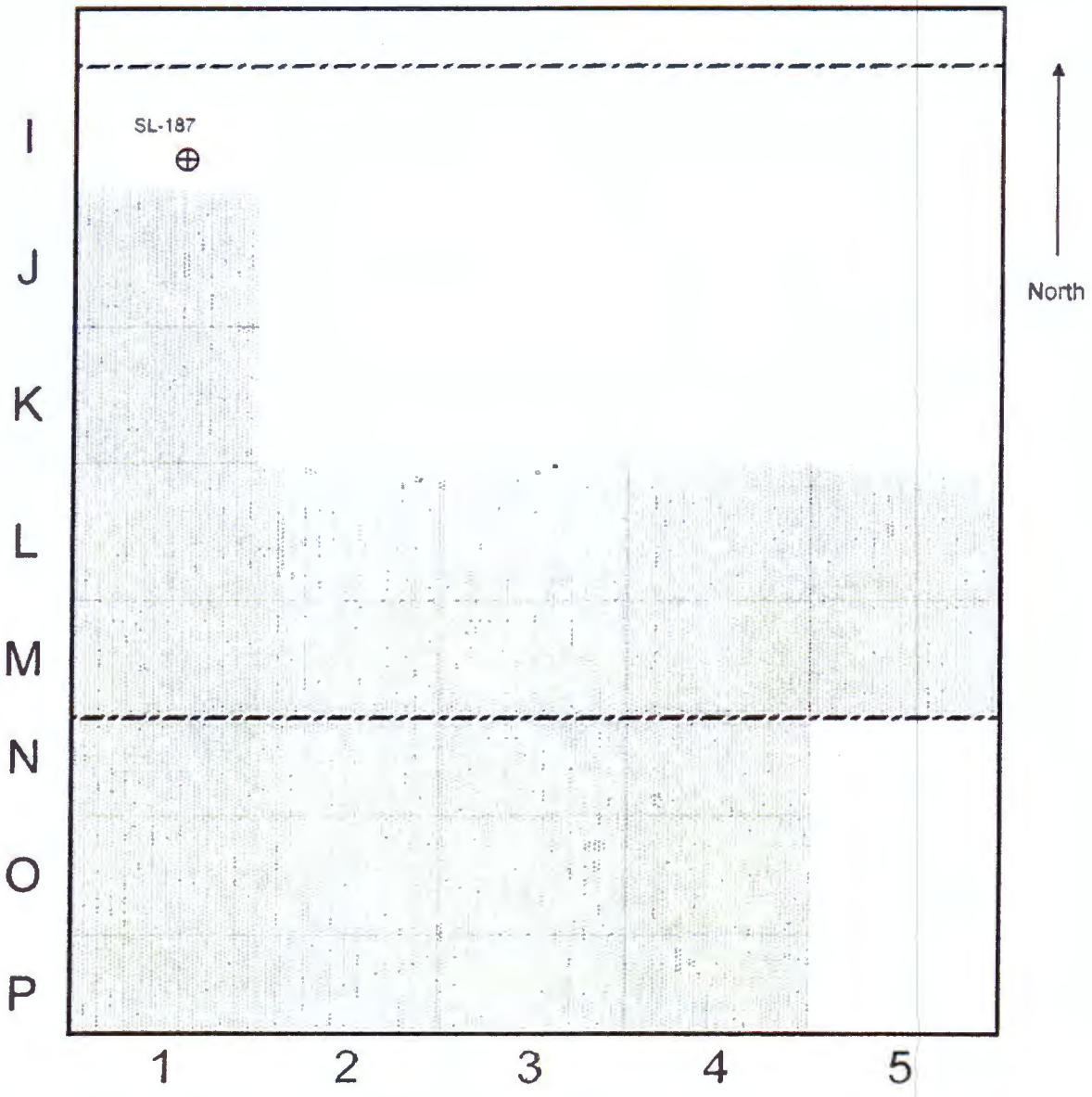
Date.	5/25/2010	Lift.	No. 4
Report.	05-016-075	Operator.	L. Hay
Map No:	4 of 5	Material	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C. S013213A00

CQA Moisture Density Map Cell 9

Date	5/19/2010	Lift.	No. 5
Report.	05-016-075	Operator	L. Hay
Map No.	5 of 5	Material.	Admix
Grid.	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580 234-8780 | Fax 580 237 4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-169
Project	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	5/25/2010
Tested By:	J. Schut	Date	5/25/2010	Sampled By	L. Hay
Reviewed By	T. Williams TW	Date	5/26/2010	Date Received:	5/25/2010
Comments				Report No.	05-016-075

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3955.60 g
2. Mass of Proctor mold + sand, W_2	5404.60 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.84 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6374.50 g
6. Mass of bottle + cone + sand (after use), W_4	4749.20 g
7. Weight of sand to fill the cone, $W_c = W_3 - W_4$	3.58 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6305.9 g
9. Mass of bottle + cone + sand (after use), W_8	3551.2 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0260 ft^3
11. Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2063.70 g
13. Mass of gallon can + dry soil, W_9	1841.60 g
14. Moist unit weight of soil in field $= W_7 - W_9 / V_2$	132.21 lb/ft^3
15. Moisture content in the field, w (%) $= \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.6%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} =$ / (1+(w (%)/100)	113.37 lb/ft^3
17. Comparision moisture content =	17.6%
18. Dry unit weight comparison =	111.7 lb/ft^3

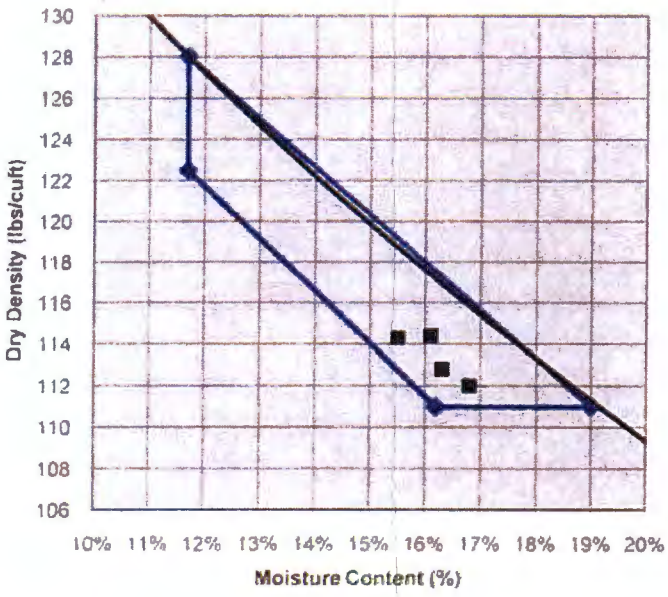
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	5/27/2010	Moisture Std.	650	Density Std	2243
Description	Admix Soil	Offsets.	Moisture -	Density -	
Report	05-016-077	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-191	1	15:05	3	114.4	16.1%	0.473	16.2%	92.0%	H1	Pass
SL-192	1	15:10	3	112.0	16.8%	0.505	N/A	90.0%	G1	Pass
SL-193	1	15:17	3	114.3	15.5%	0.474	N/A	88.0%	G2	Pass
SL-194	1	15:20	3	112.8	16.3%	0.495	16.9%	89.0%	H2	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-191	M6	351.98	309.71	49.52
SL-192				
SL-193				
SL-194	M7	413.40	360.89	50.01



Jed EVan

nvirotech Engineering & Consulting Inc

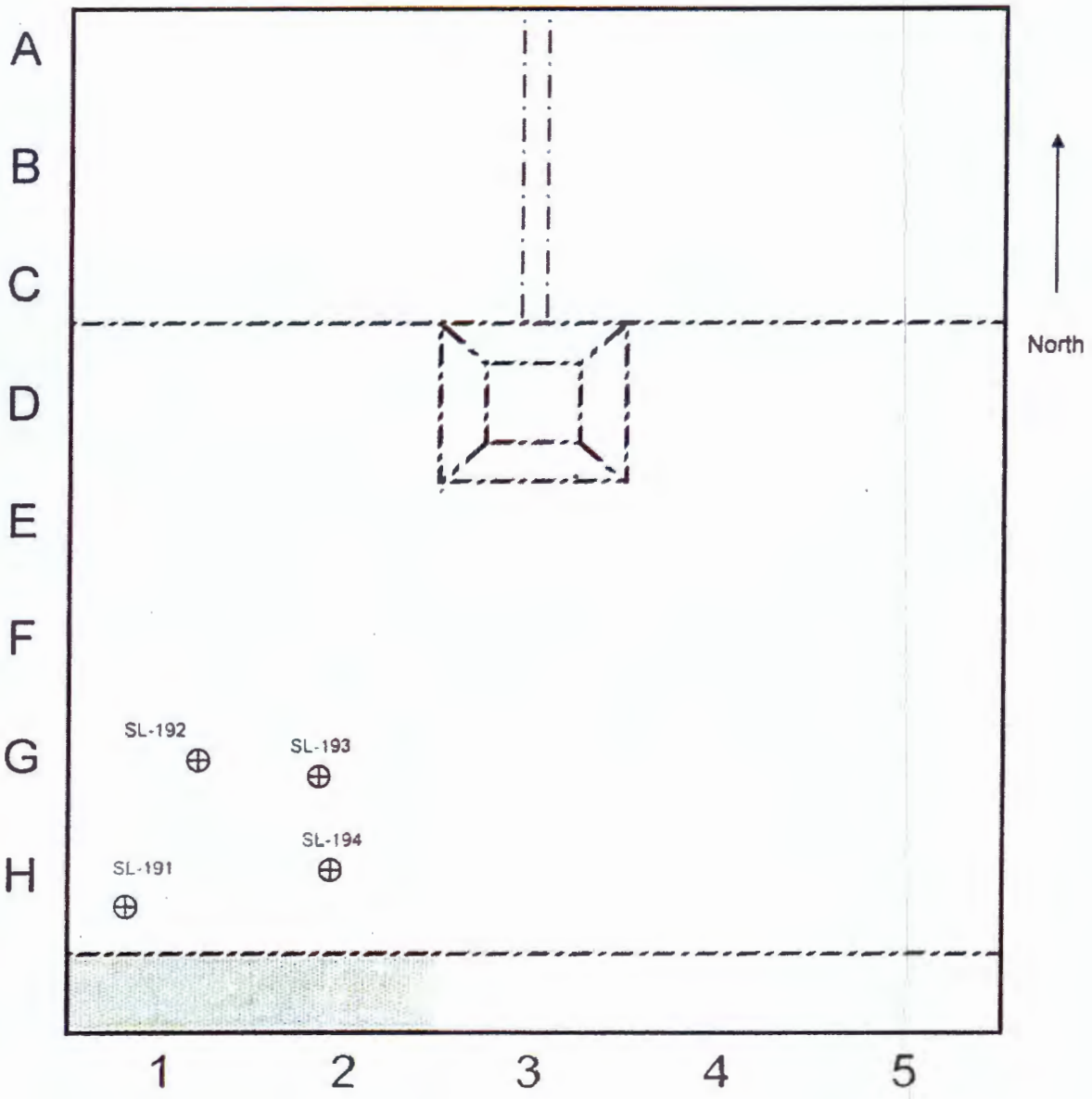
5/28/10

Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

Date	5/27/2010	Lift:	1
Report	05-016-077	Operator	LH
Map No:		Material:	Admix
Grid	95-ft x 90-ft	Notes:	



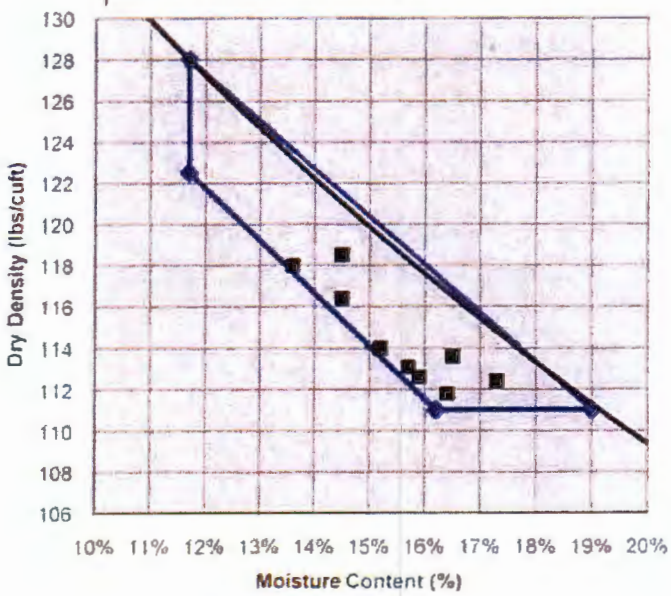
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/1/2010	Moisture Std	643	Density Std	2232
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-079	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-195	6	7 50	3	116.4	14.5%	0.448	N/A	87.0%	I1	Pass
SL-196	3	7.55	3	111.8	16.4%	0.507	N/A	87.0%	I2	Pass
SL-197	2	8.00	3	112.6	15.9%	0.497	N/A	86.0%	H1	Pass
SL-198	2	8.05	3	113.6	16.5%	0.484	N/A	92 0%	H2	Pass
SL-199	2	8.10	3	113.1	15.7%	0.49	N/A	87.0%	G1	Pass
SL-200	2	8:15	3	114.0	15.2%	0.478	N/A	86.0%	G2	Pass
SL-201	4	8.40	3	112.4	17.3%	0.499	N/A	94 0%	K5	Pass
SL-202	4	8:45	3	118.0	13.6%	0.43	N/A	85 0%	K4	Pass
SL-203	4	8.50	3	118.5	14.5%	0.445	N/A	88.0%	K3	Pass
SL-204	4	8 55	3	113.1	15.7%	0.49	N/A	87 0%	J3	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-195				
SL-196				
SL-197				
SL-198				
SL-199				
SL-200				
SL-201				
SL-202				
SL-203				
SL-204				



nvirotech Engineering & Consulting Inc

6/2/10
Date

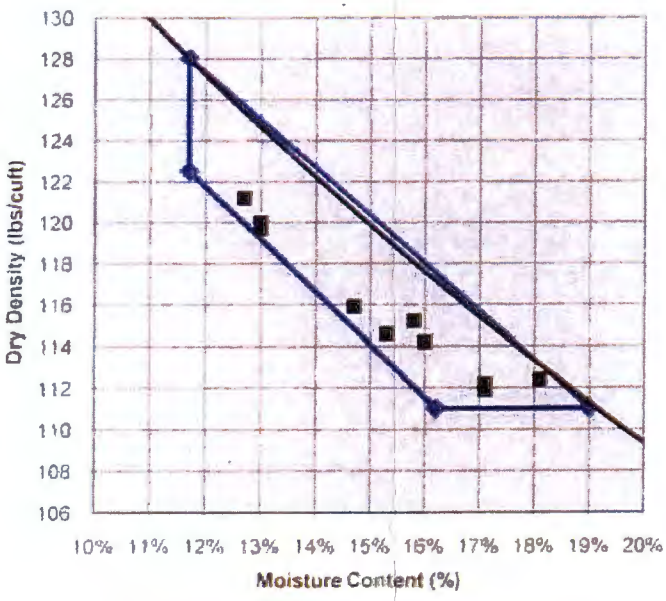
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID:	27881
Test Date	6/1/2010	Moisture Std	643	Density Std	2232
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-079	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-205	4	9:00	3	121.2	12.7%	0.389	N/A	88.0%	J4	Pass
SL-206	4	9:05	3	120.0	13.0%	0.407	13.2%	86.0%	J5	Pass
SL-207	5	10:50	3	114.6	15.3%	0.471	N/A	88.0%	P5	Pass
SL-208	5	10:55	3	115.2	15.8%	0.464	N/A	92.0%	O5	Pass
SL-209	5	12:35	5	112.4	18.1%	0.500	N/A	98.0%	N5	Pass
SL-210	5	14:05	3	114.2	16.0%	0.477	N/A	91.0%	K5	Pass
SL-211	5	14:10	3	111.9	17.1%	0.507	N/A	91.0%	K4	Pass
SL-212	5	14:15	3	119.7	13.0%	0.408	N/A	86.0%	K3	Pass
SL-213	5	14:20	3	112.2	17.1%	0.503	N/A	92.0%	J3	Pass
SL-214	5	14:25	3	115.9	14.7%	0.456	N/A	87.0%	J4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-205				
SL-206	SC	2485.4	2253.8	505.8
SL-207				
SL-208				
SL-209	Shelby			
SL-210				
SL-211				
SL-212				
SL-213				
SL-214				



Envirotech Engineering & Consulting, Inc

6/2/10
Date

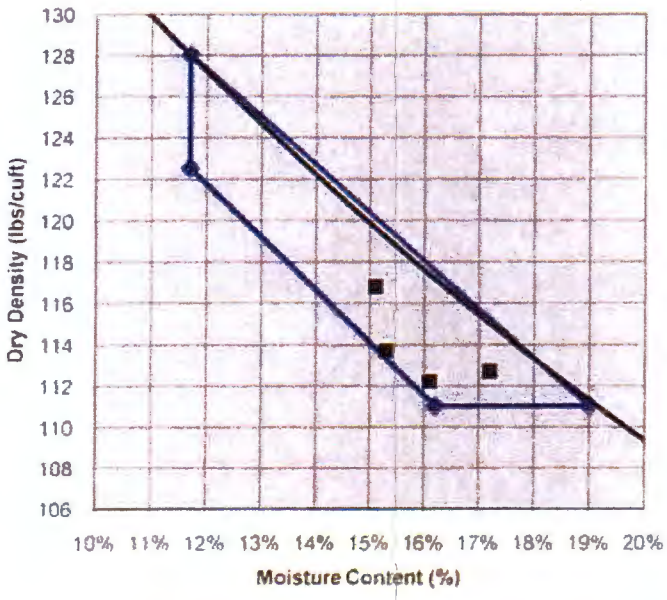
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/1/2010	Moisture Std.	643	Density Std	2232
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-079	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-215	5	14.30	3	116.8	15.1%	0.443	N/A	92.0%	J5	Pass
SL-216	6	15:15	3	112.2	16.1%	0.502	N/A	87.0%	N5	Pass
SL-217	6	15:20	3	112.7	17.2%	0.493	N/A	94.0%	O5	Pass
SL-218	6	15.25	3	113.7	15.3%	0.482	N/A	86.0%	P5	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-215				
SL-216				
SL-217				
SL-218				



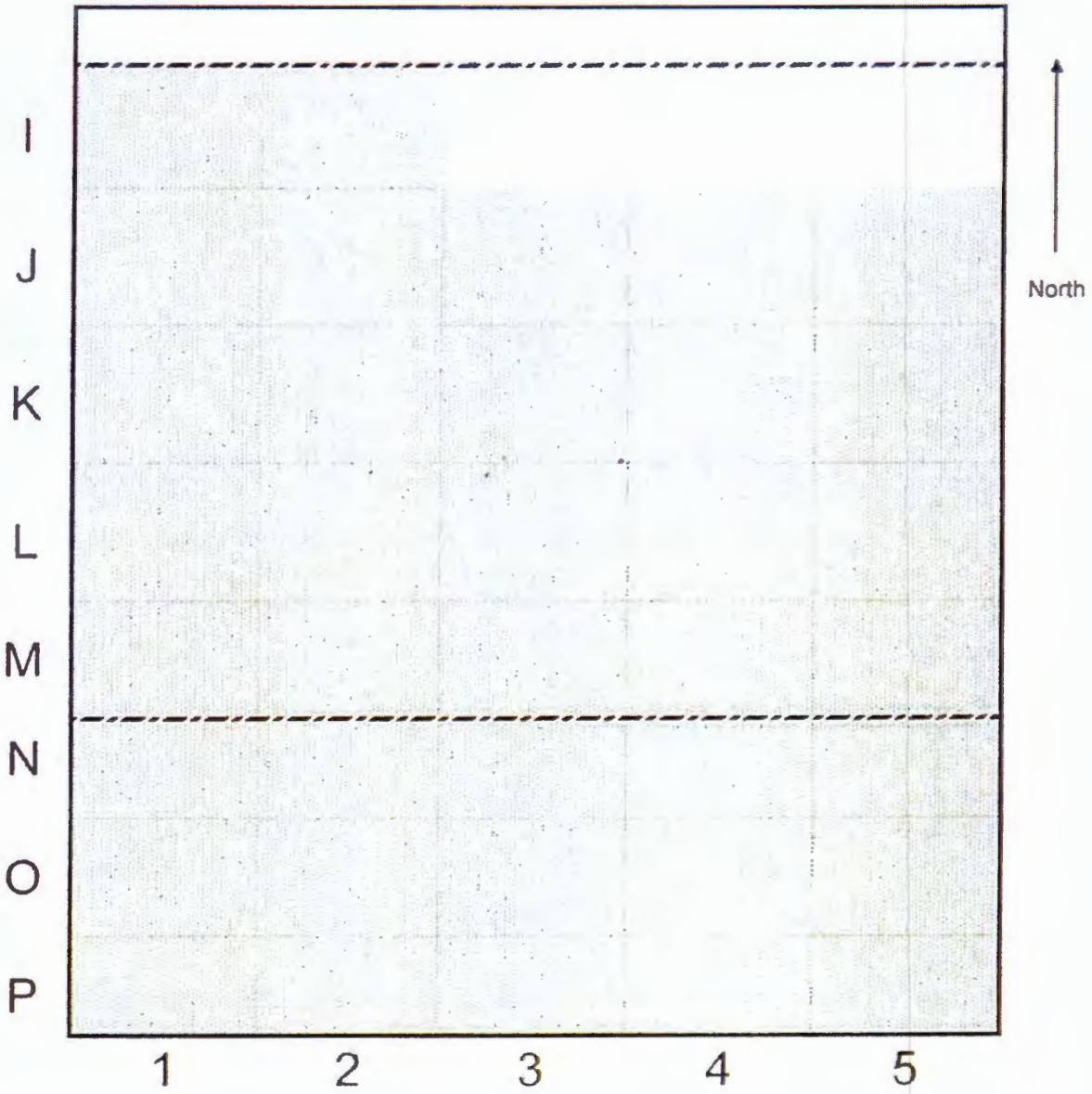
nvirotech Engineering & Consulting Inc

6/2/10
Date

S/C S013213A00

CQA Moisture Density Map Cell 9

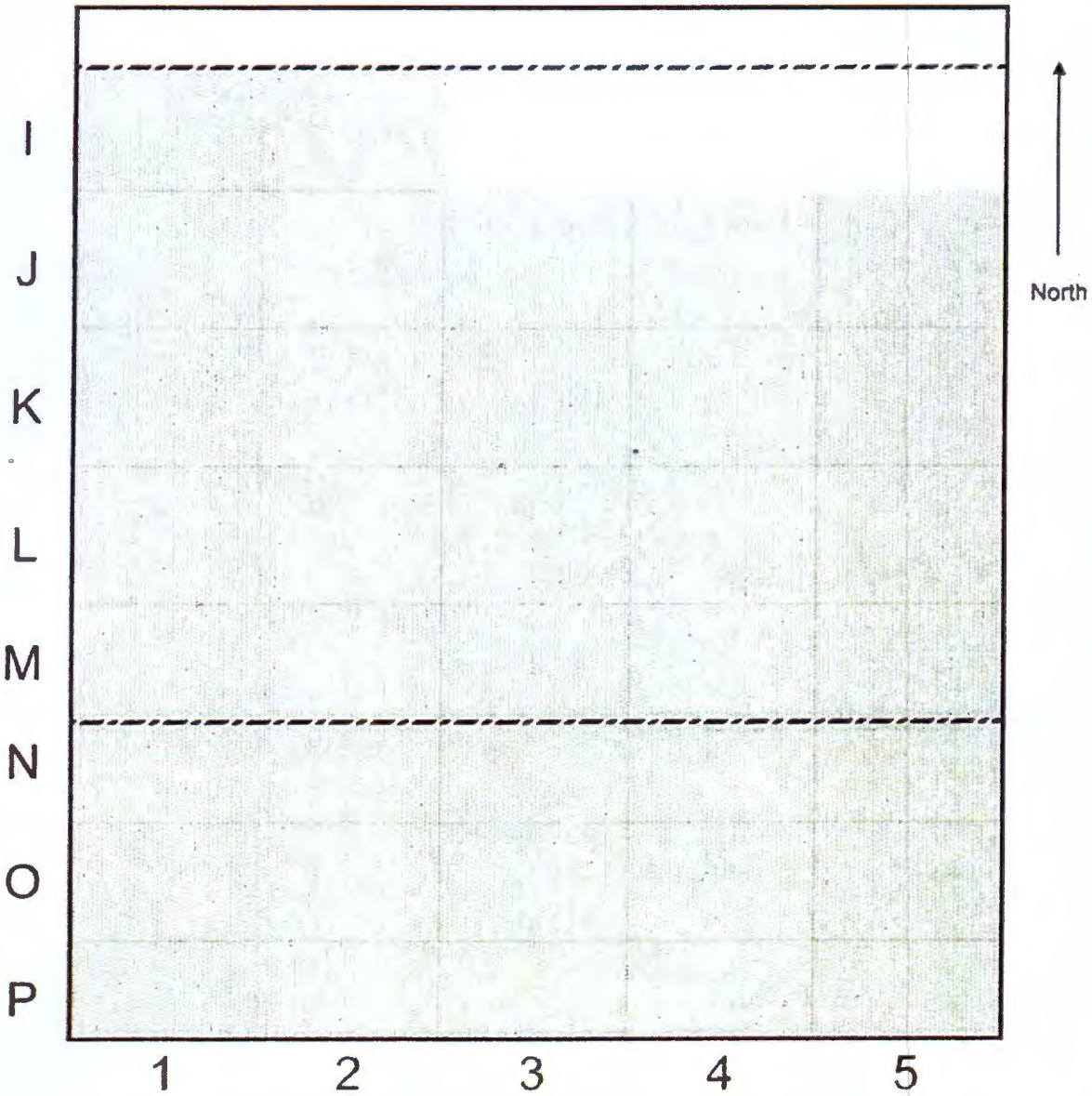
Date.	6/1/2010	Lift.	No 1
Report.	05-016-079	Operator.	L Hay
Map No.	1 of 8	Material	Admix
Grid	95-ft x 90-ft	Notes.	



S/C S013213A00

CQA Moisture Density Map Cell 9

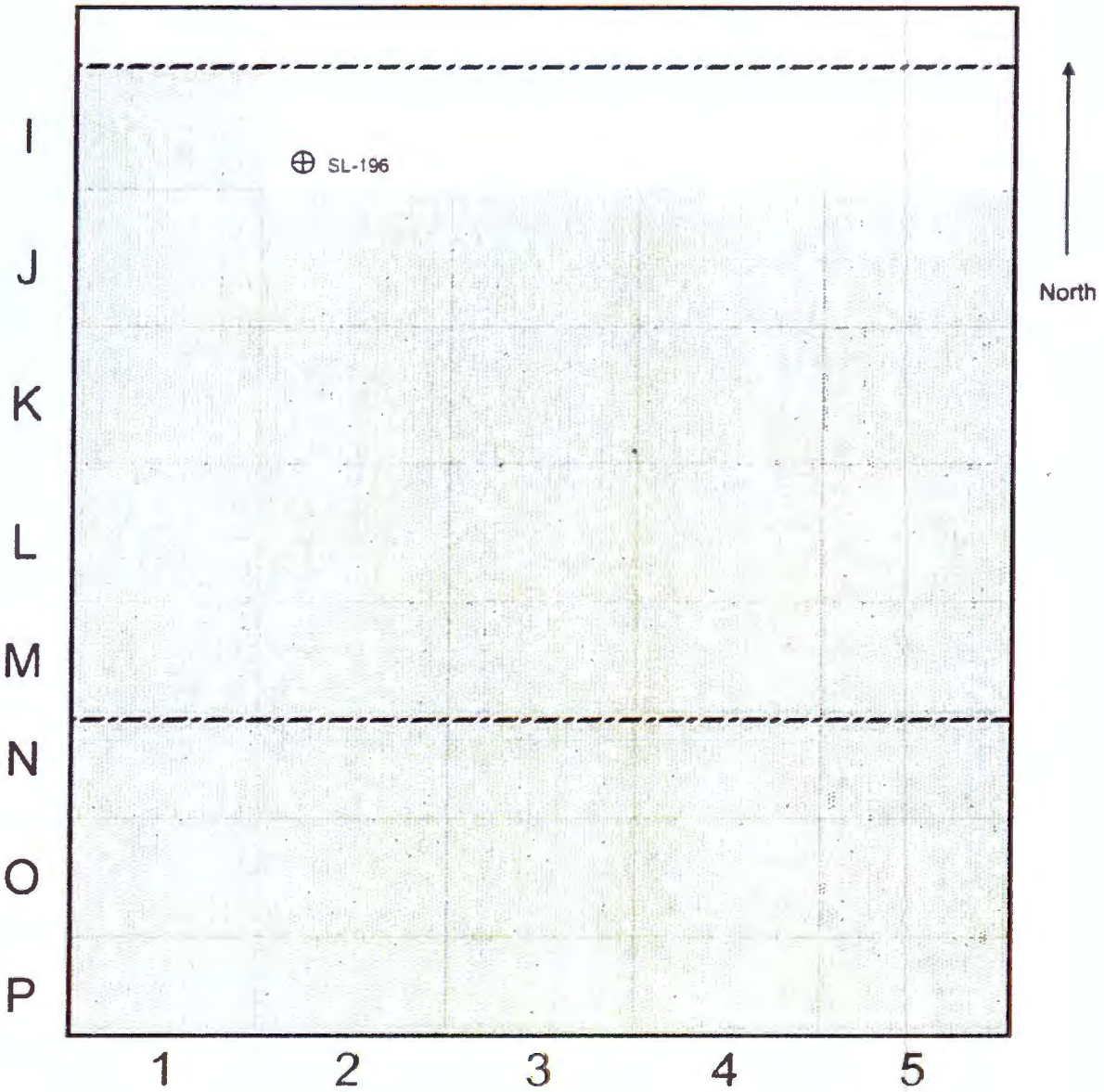
Date	6/1/2010	Lift	No 2
Report.	05-016-079	Operator	L. Hay
Map No	2 of 8	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

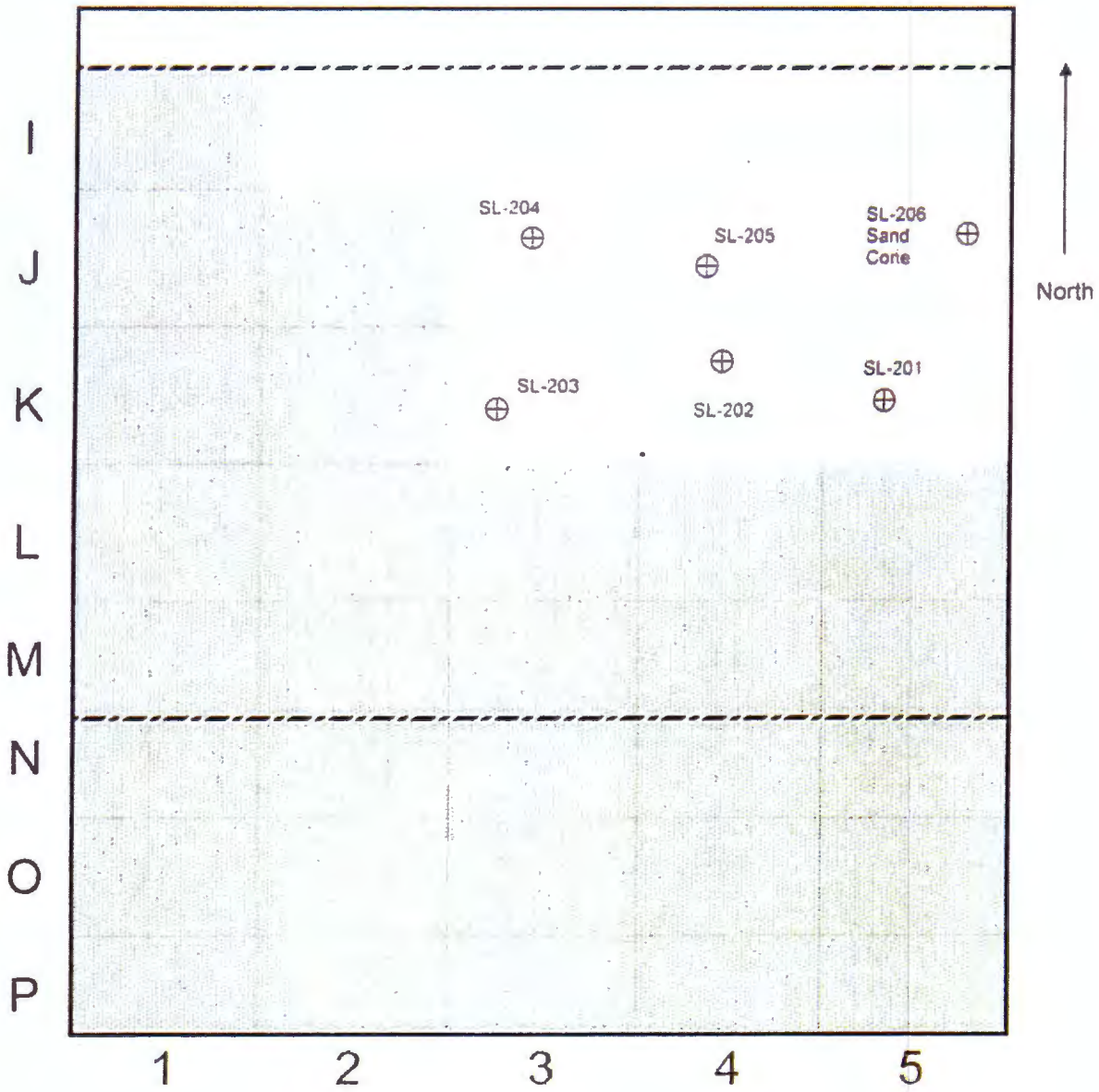
Date:	6/1/2010	Lift:	No 3
Report:	05-016-079	Operator:	L Hay
Map No:	3 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

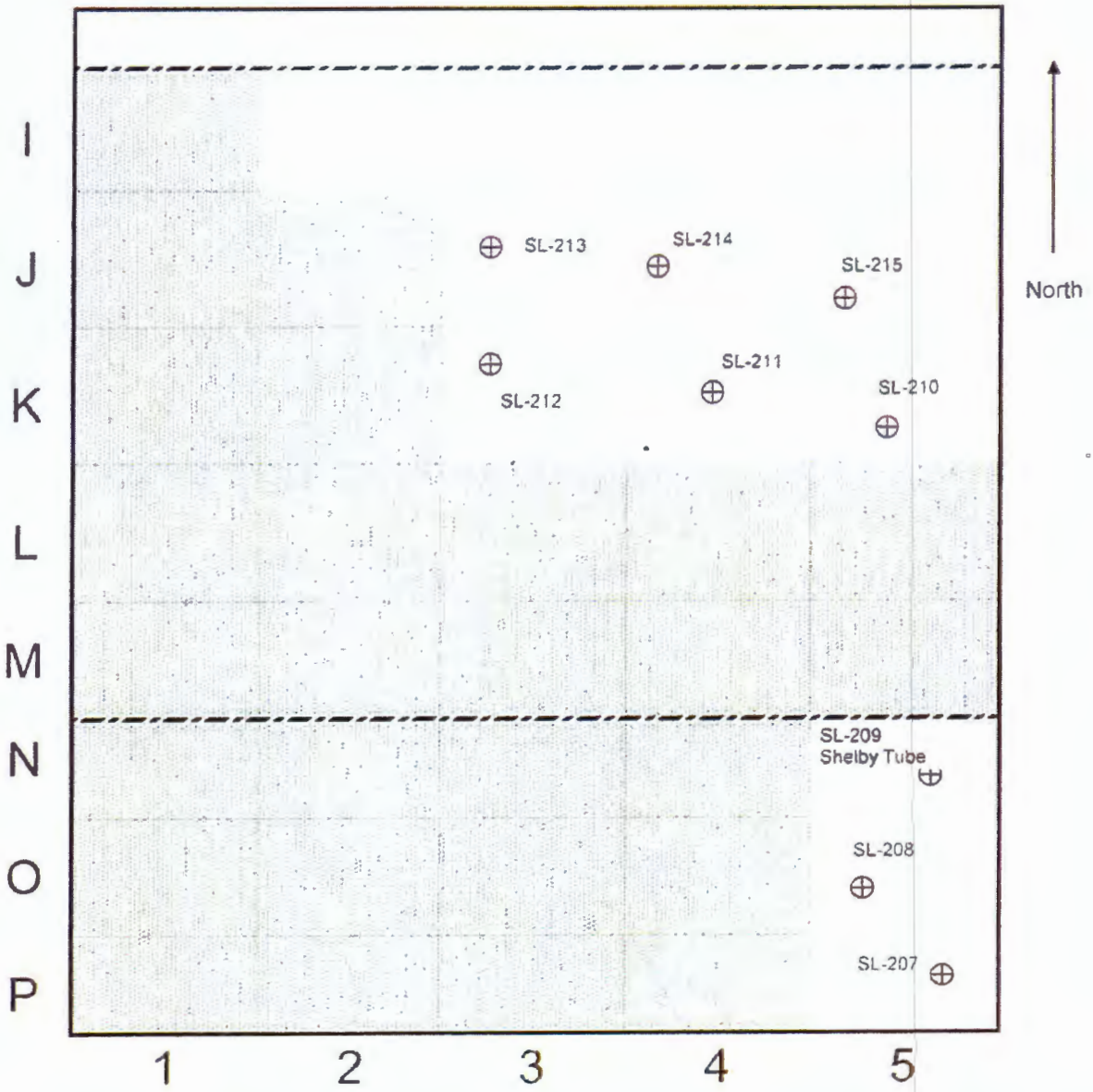
Date	6/1/2010	Lift.	No. 4
Report.	05-016-079	Operator	L Hay
Map No	4 of 8	Material	Admix
Grid	95-ft x 90-ft	Notes.	



S/C. S013213A00

CQA Moisture Density Map Cell 9

Date:	6/1/2010	Lift:	No. 5
Report:	05-016-079	Operator:	L. Hay
Map No:	5 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	

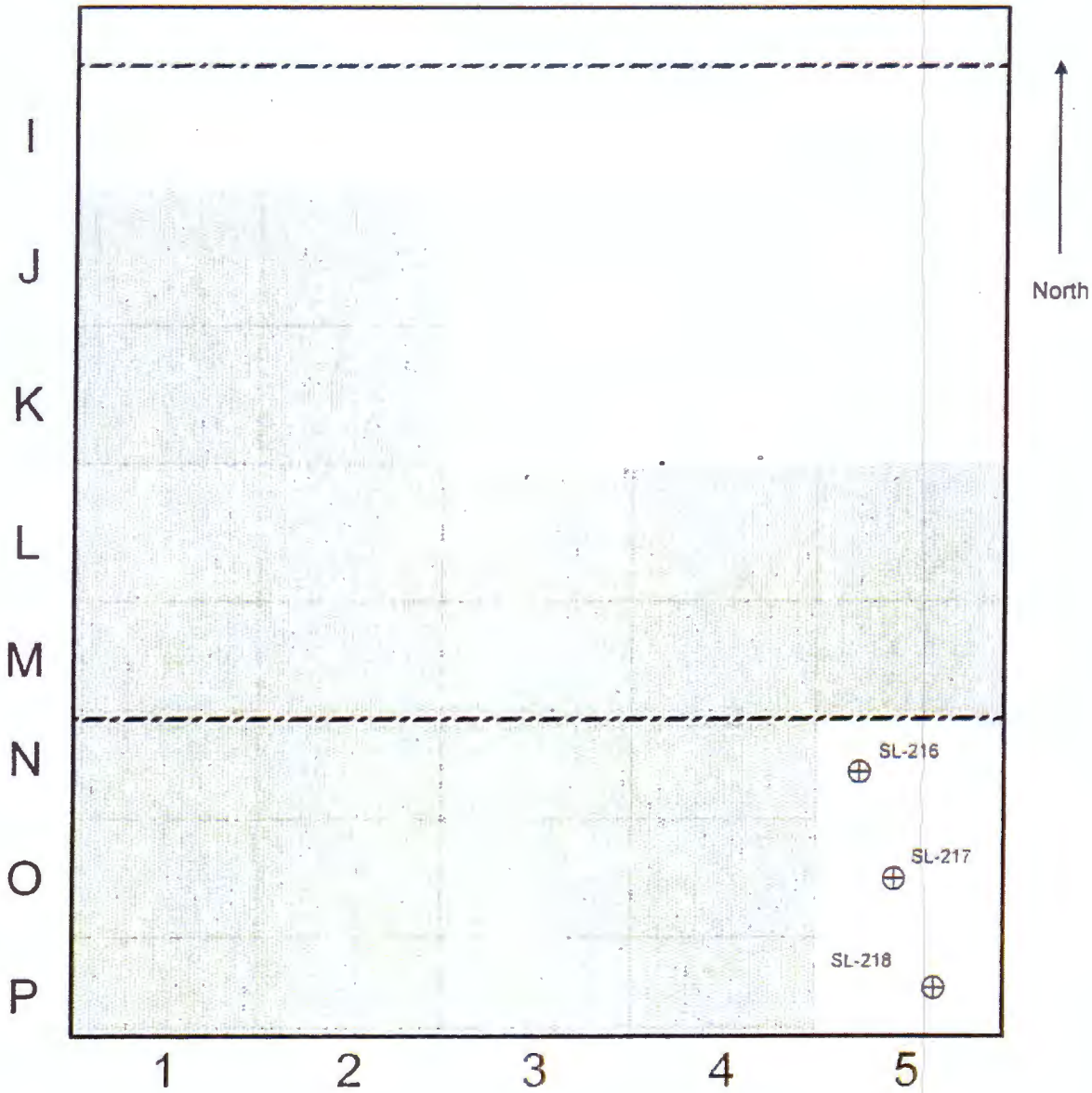


S/C S013213A00

CQA Moisture Density Map Cell 9

05-016-074

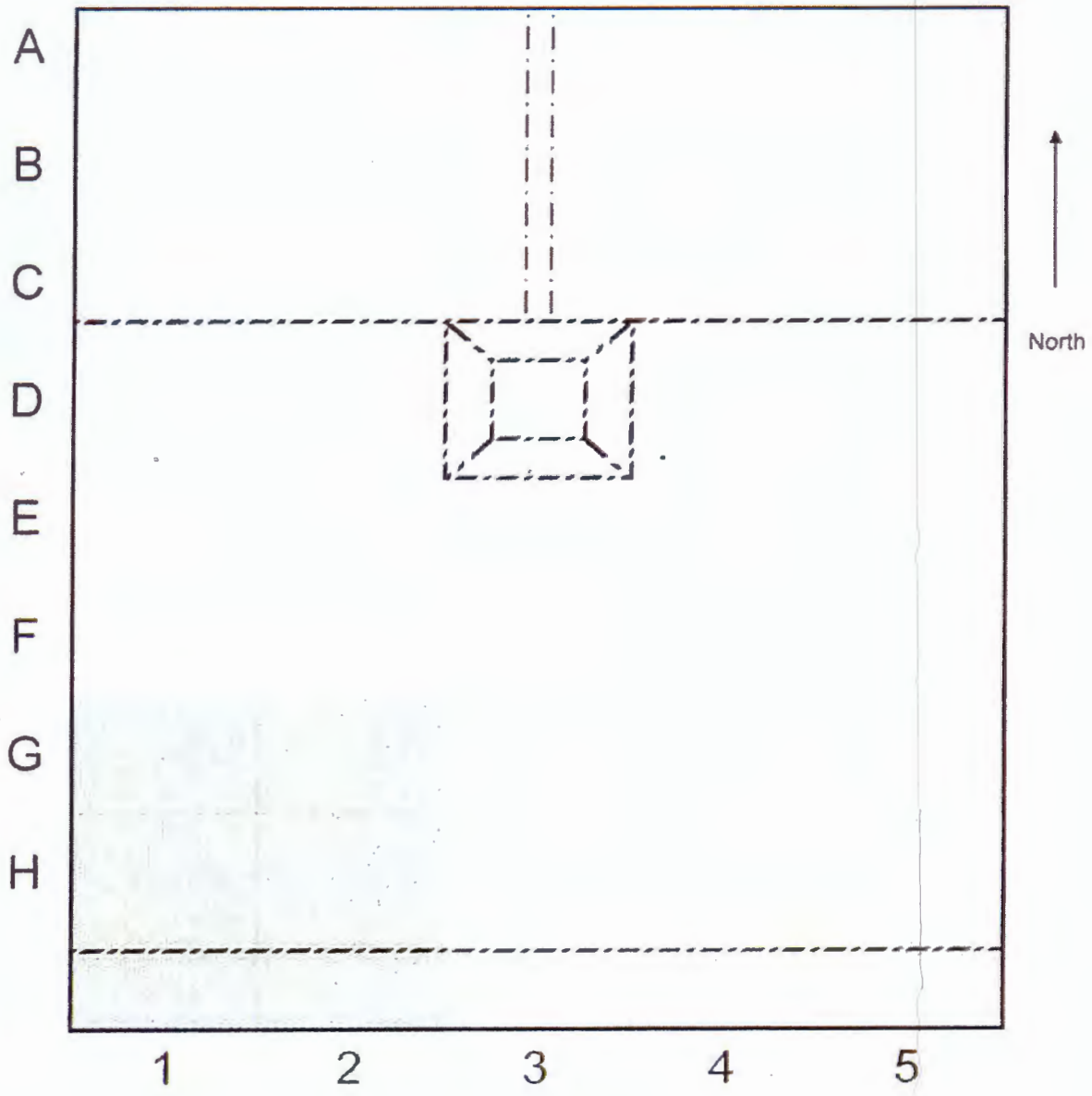
Date	6/1/2010	Lift	No 6
Report	05-016-079	Operator	L Hay
Map No	6 of 8	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

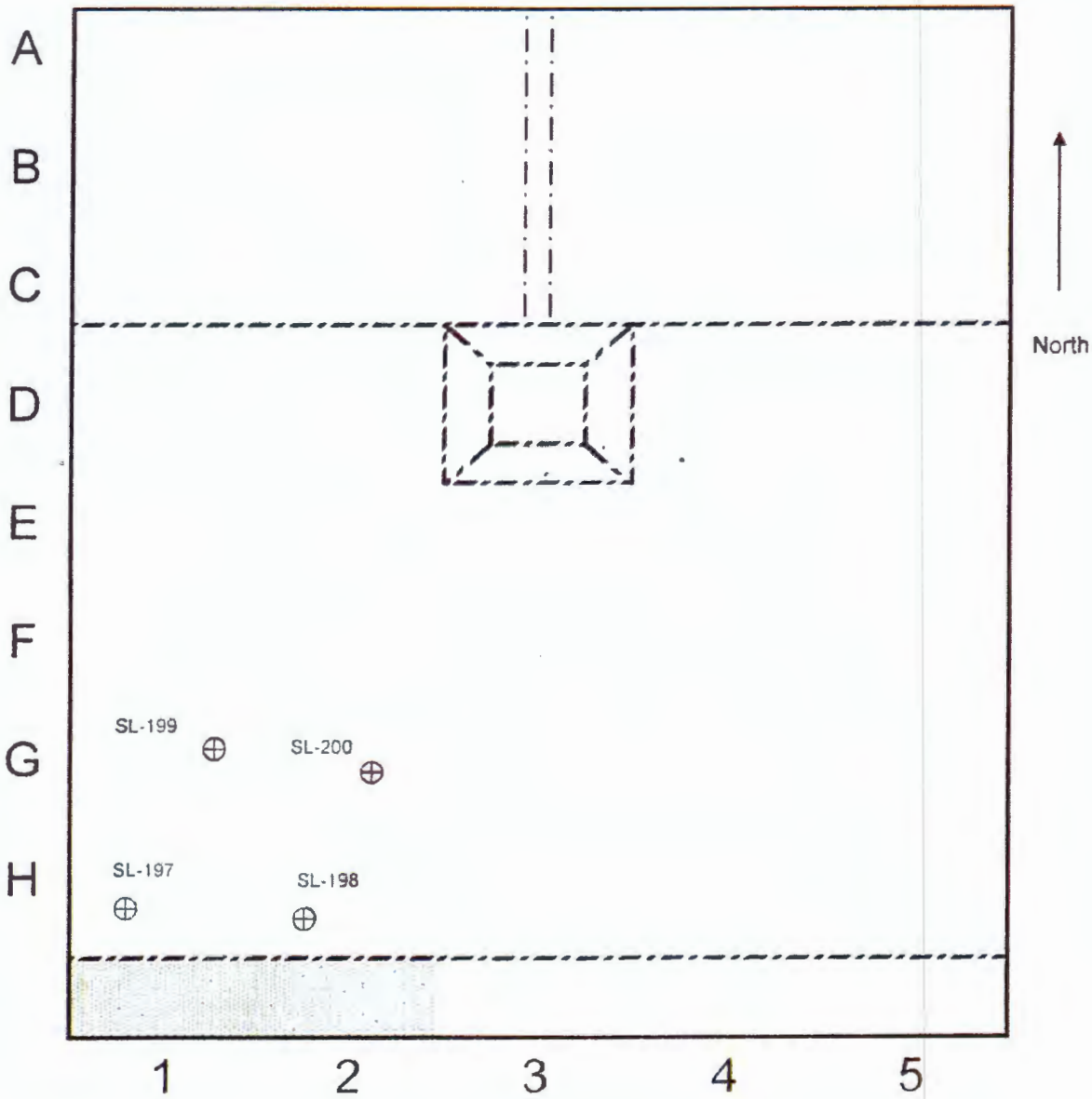
Date	6/1/2010	Lift	1
Report	05-016-079	Operator	LH
Map No.	7 of 8	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/1/2010	Lift:	2
Report:	05-016-079	Operator:	LH
Map No.	8 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid OK 73701
580 234-8780 | Fax 580 237-4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-206
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	6/1/2010
Tested By:	L. Hay	Date:	6/1/2010	Sampled By:	L. Hay
Reviewed By:	J. Voss	Date:	5/25/2010	Date Received:	6/1/2010
Comments:				Report No.:	05-016-079

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1 Mass of Proctor mold, W_1	3956.10 g
2 Mass of Proctor mold + sand, W_2	5394.20 g
3 Volume of mold, V_1	0.03 ft
4 Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.11 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6115.40 g
6. Mass of bottle + cone + sand (after use), W_4	4482.70 g
7 Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_8	6115.7 g
9. Mass of bottle + cone + sand (after use), W_9	3078.4 g
10 Volume of hole, $V_2 = \frac{W_8 - W_9 - W_c}{d\,(sand)}$	0.0326 ft^3
11 Mass of gallon can, W_5	505.80 g
12. Mass of gallon can + moist soil, W_7	2485.40 g
13. Mass of gallon can + dry soil, W_9	2253.80 g
14 Moist unit weight of soil in field, $= W_7 - W_5 / V_2$	134.05 lb/ft^3
15 Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	13.2%
16 Dry unit weight in the field, $_{d\,(sand)} =$ / (1+(w (%)/100)	118.37 lb/ft^3
17. Comparision moisture content =	13.0%
18. Dry unit weight comparison =	120.0 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

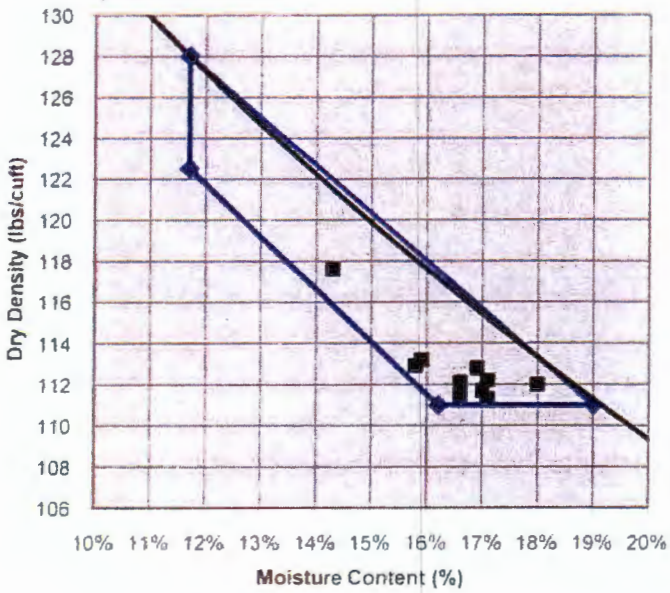
Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/3/2010
Description: Admix Soil
Report: 5-16-81

Model: 3430 Troxler ID 27881
Moisture Std: 648 Density Std 2224
Offsets: Moisture - Density -
Acceptable Zone

Comments: Unless otherwise stated - All test at taken at a depth of 6-in. Zones J-3, J-4, and J-5 were placed as two sections with the south half placed prior to this date and the north half placed on this date.

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-219	1	9:00	3	111.7	17.0%	0.509	N/A	90.0%	J3	Pass
SL-220	1	9:10	3	112.8	16.9%	0.494	N/A	92.0%	J4	Pass
SL-221	1	9:26	3	111.5	16.6%	0.512	17.7%	88.0%	J5	Pass
SL-222	2	11:00	3	112.1	16.6%	0.504	N/A	89.0%	J3	Pass
SL-223	2	11:06	3	112.2	17.1%	0.503	N/A	92.0%	J4	Pass
SL-224	2	11:12	3	111.3	17.1%	0.514	N/A	90.0%	J5	Pass
SL-225	1	13:00	3	112.0	18.0%	0.506	N/A	96.0%	F2	Pass
SL-226	1	13:05	3	117.6	14.3%	0.434	N/A	89.0%	F1	Pass
SL-227	1	13:10	3	112.9	15.8%	0.493	N/A	87.0%	E1	Pass
SL-228	1	13:14	3	113.2	15.9%	0.489	N/A	88.0%	E2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-219				
SL-220				
SL-221	SC	2294	2025.2	505.7
SL-222				
SL-223				
SL-224				
SL-225				
SL-226				
SL-227				
SL-228				



nvirotech Engineering & Consulting, Inc

6/7/10
Date

FIELD DENSITY TEST (ASTM D-6938)

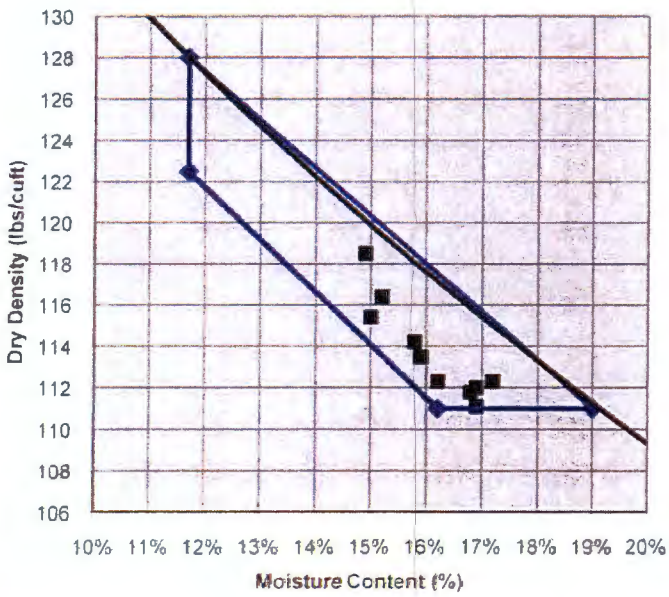
ENVIROTECH

Client:	WCH				
Submittal:	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID:	27881
Test Date:	6/3/2010	Moisture Std:	648	Density Stc	2224
Description.	Admix Soil	Offsets:	Moisture -	Density	-
Report:	5-16-81	Acceptable Zone			

Comments. Unless otherwise stated - All test at taken at a depth of 6-in. Zones J-3, J-4, and J-5 were placed as two sections with the south half placed prior to this date and the north half placed on this date.

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-229	3	13:30	3	111.1	16.9%	0.519	N/A	88.0%	J5	Pass
SL-230	3	13:36	3	112.3	16.2%	0.502	N/A	87.0%	J4	Pass
SL-231	3	13:43	3	111.8	16.8%	0.508	N/A	89.0%	J3	Pass
SL-232	4	14:19	3	115.4	15.0%	0.461	N/A	88.0%	J2	Pass
SL-233	4	14:24	5	118.5	14.9%	0.423	N/A	95.0%	I2	Pass
SL-234	3	14:38	3	112.0	16.9%	0.505	N/A	90.0%	H1	Pass
SL-235	3	14:48	3	112.3	17.2%	0.500	N/A	93.0%	H2	Pass
SL-236	4	15:00	3	113.5	15.9%	0.485	N/A	89.0%	H1	Pass
SL-237	3	15:10	3	114.2	15.8%	0.476	N/A	90.0%	G1	Pass
SL-238	3	15:20	3	116.4	15.2%	0.448	N/A	92.0%	G2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-229				
SL-230				
SL-231				
SL-232				
SL-233				
SL-234				
SL-235				
SL-236				
SL-237				
SL-238				



nvirotech Engineering & Consulting, Inc

6/7/10
Date

FIELD DENSITY TEST (ASTM D-6938)

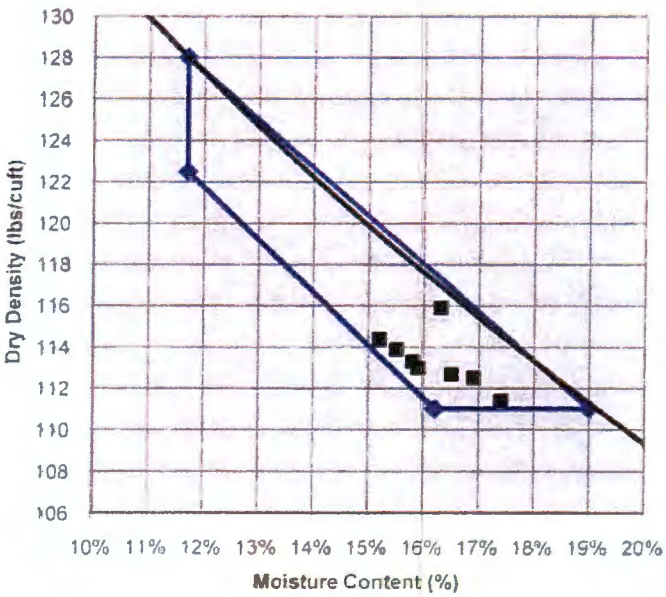
ENVIROTECH

Client	WCH				
Submittal.	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID.	27881
Test Date	6/3/2010	Moisture Std:	648	Density Stc	2224
Description	Admix Soil	Offsets:	Moisture -	Density	-
Report:	5-16-81	Acceptable Zone			

Comments. Unless otherwise stated - All test at taken at a depth of 6-in. Zones J-3, J-4. and J-5 were placed as two sections

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-239	4	15:38	3	114.4	15.2%	0.474	N/A	87.0%	H2	Pass
SL-240	2	15:44	3	115.9	16.3%	0.454	N/A	97.0%	F2	Pass
SL-241	2	15:50	3	111.4	17.4%	0.514	N/A	91.0%	F1	Pass
SL-242	2	15:53	3	113.9	15.5%	0.48	N/A	87.0%	E1	Pass
SL-243	2	15:56	3	113.3	15.8%	0.488	N/A	87.0%	E2	Pass
SL-244	1	16:00	3	112.7	16.5%	0.495	N/A	90.0%	D1	Pass
SL-245	1	16:05	3	113.0	15.9%	0.491	N/A	87.0%	D2	Pass
SL-246	4	16:18	3	112.5	16.9%	0.498	N/A	92.0%	J5	Pass
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-239				
SL-240				
SL-241				
SL-242				
SL-243				
SL-244				
SL-245				
SL-246				



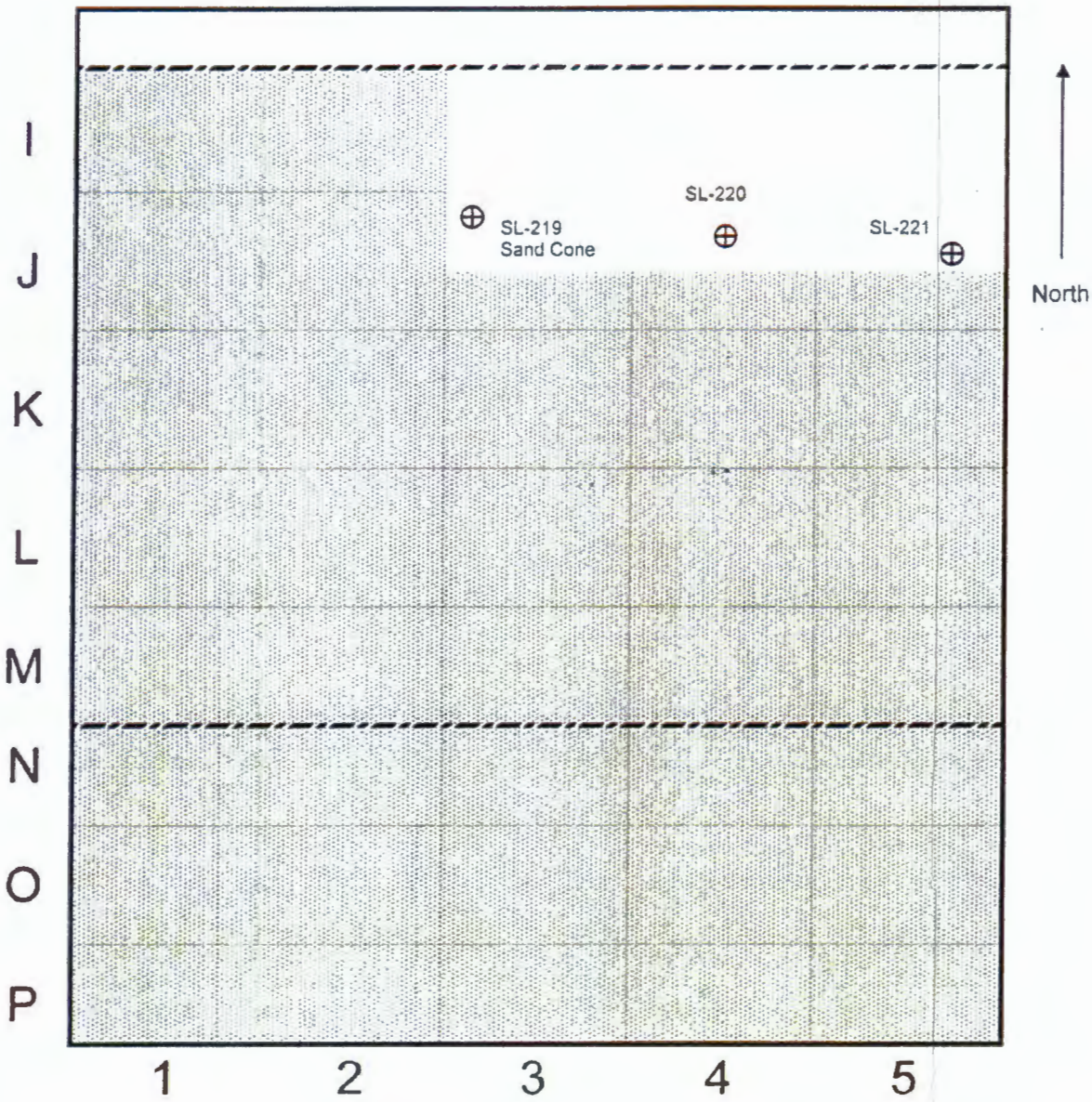
Envirotech Engineering & Consulting. Inc

6/7/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

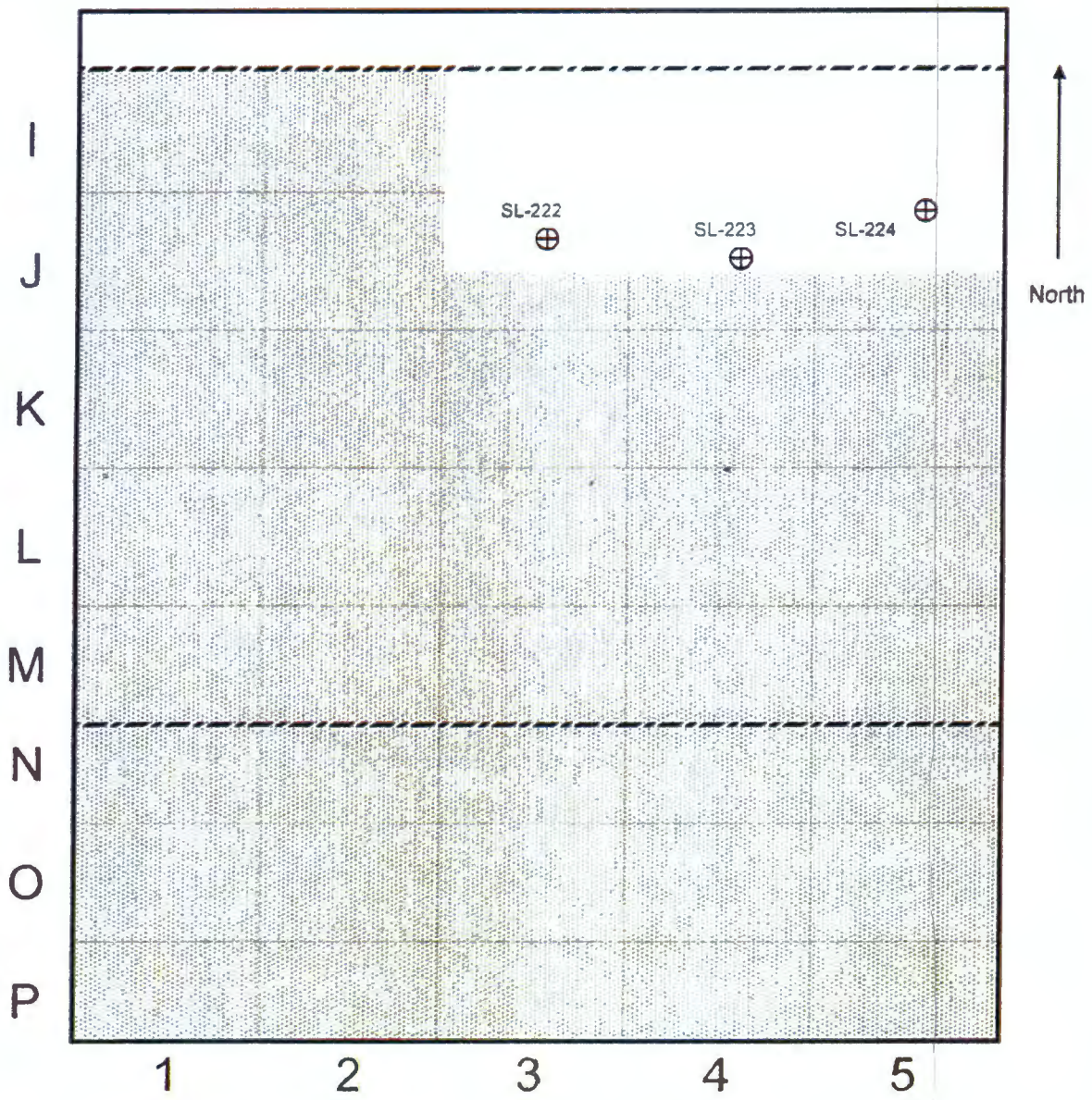
Date:	6/3/2010	Lift:	No. 1
Report:	5-16-81	Operator:	J. Schut
Map No:	1 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

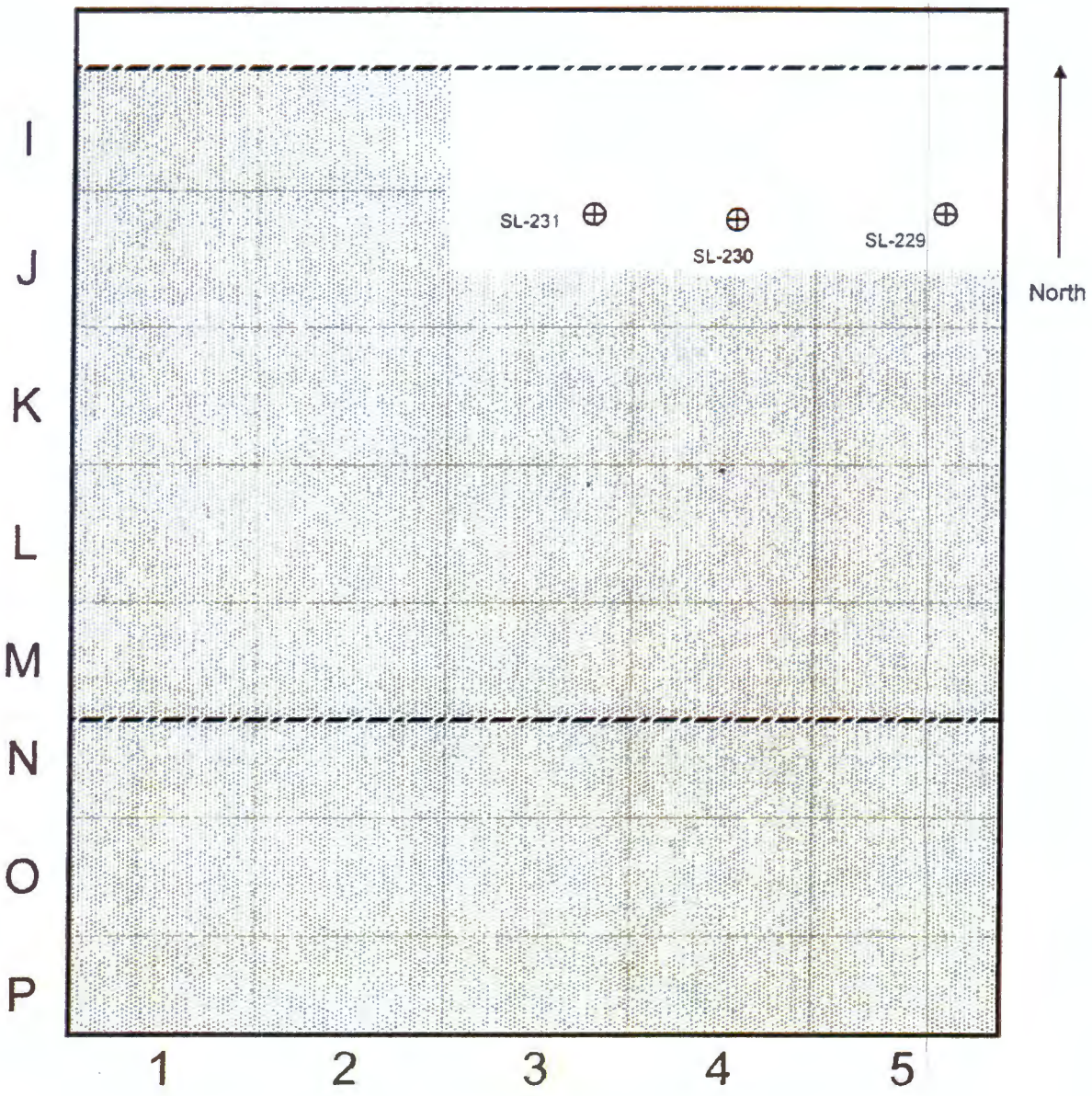
Date:	6/3/2010	Lift:	No. 2
Report:	5-16-81	Operator:	J. Schut
Map No.	2 of 8	Material:	Admix
Grid.	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

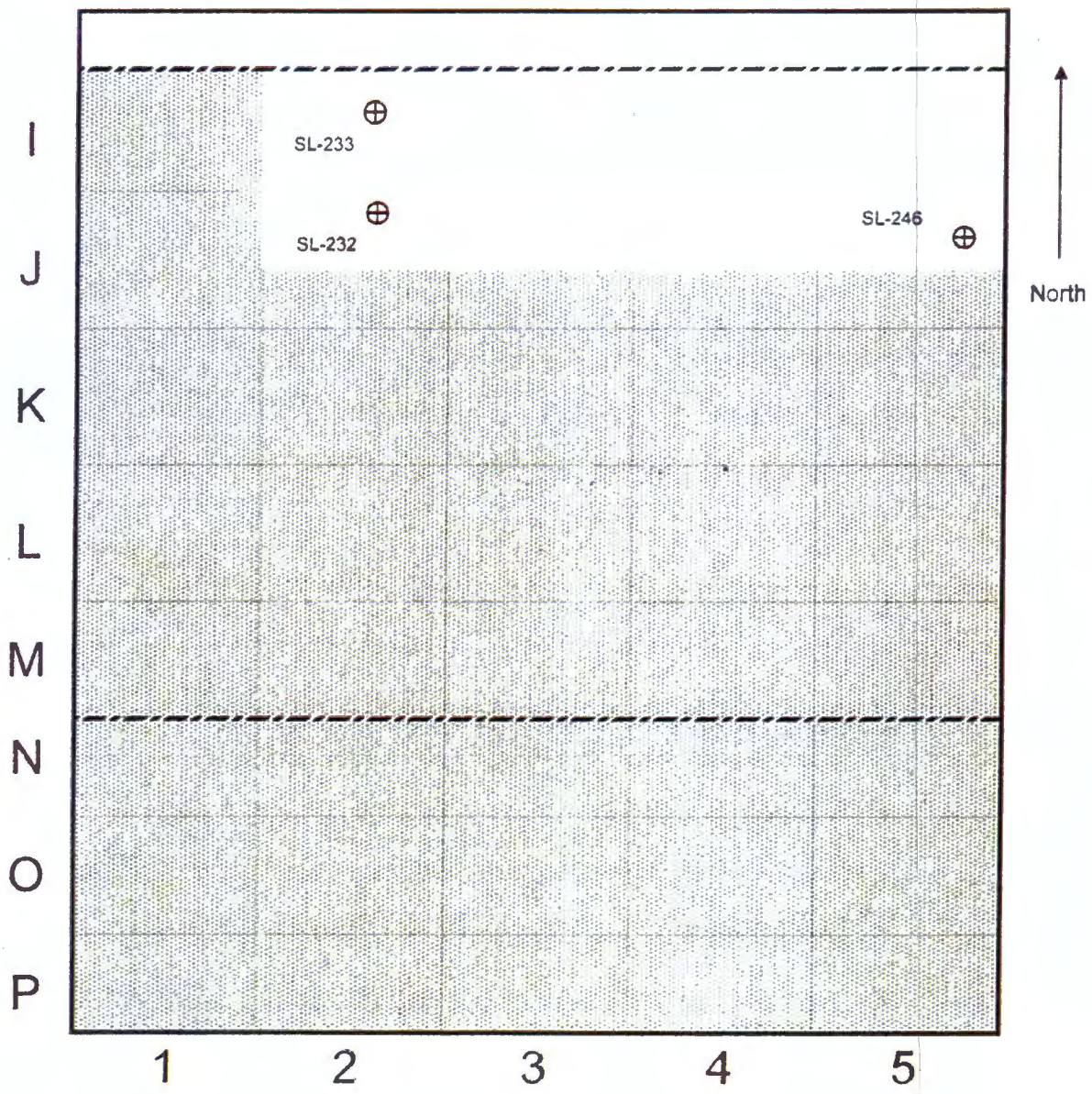
Date:	6/3/2010	Lift:	No. 3
Report:	5-16-81	Operator:	J. Schut
Map No.	3 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

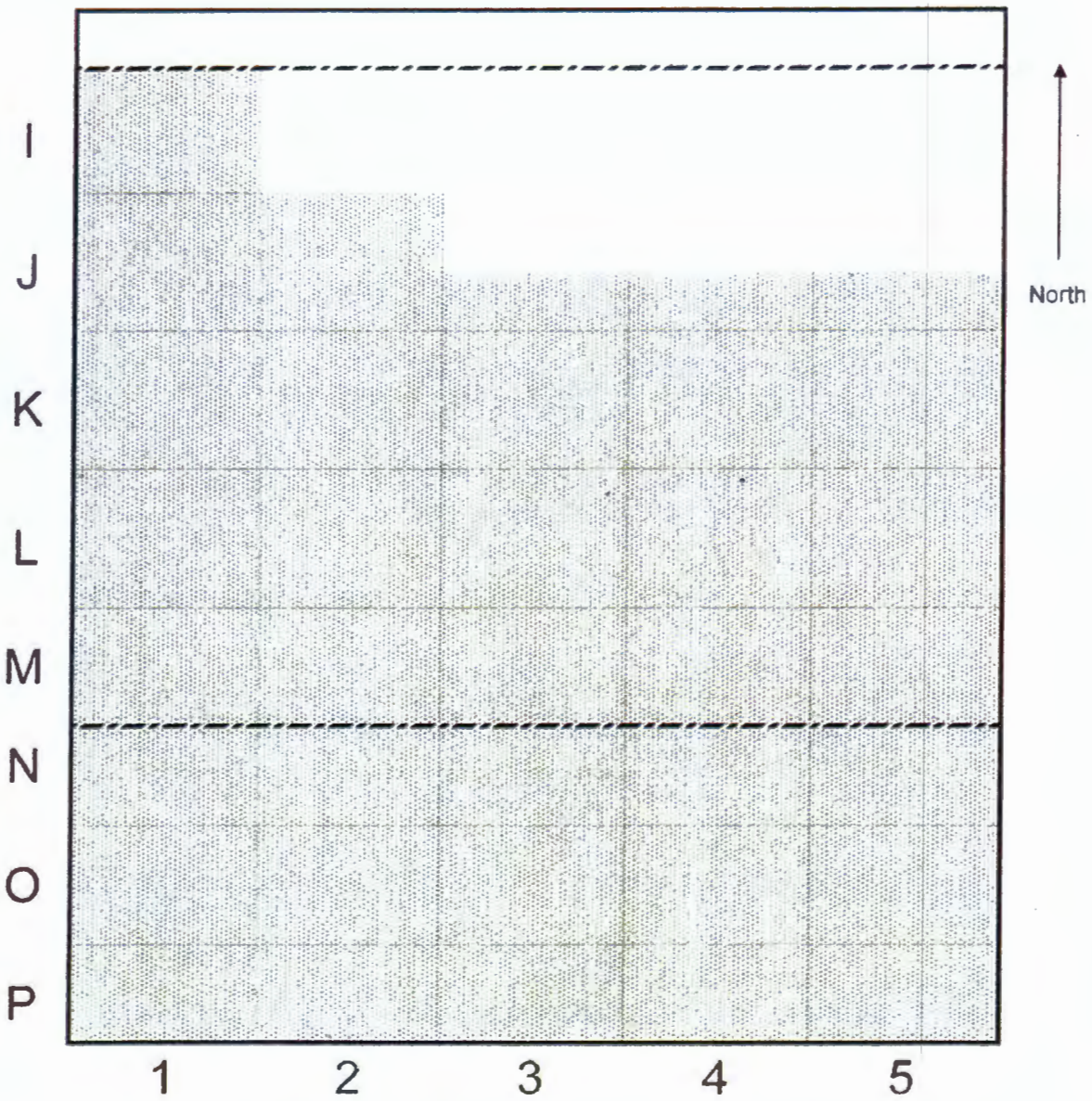
Date:	6/3/2010	Lift:	No. 4
Report:	5-16-81	Operator:	J. Schut
Map No.	4 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/3/2010	Lift:	No. 5
Report:	5-16-81	Operator:	J. Schut
Map No:	5 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	

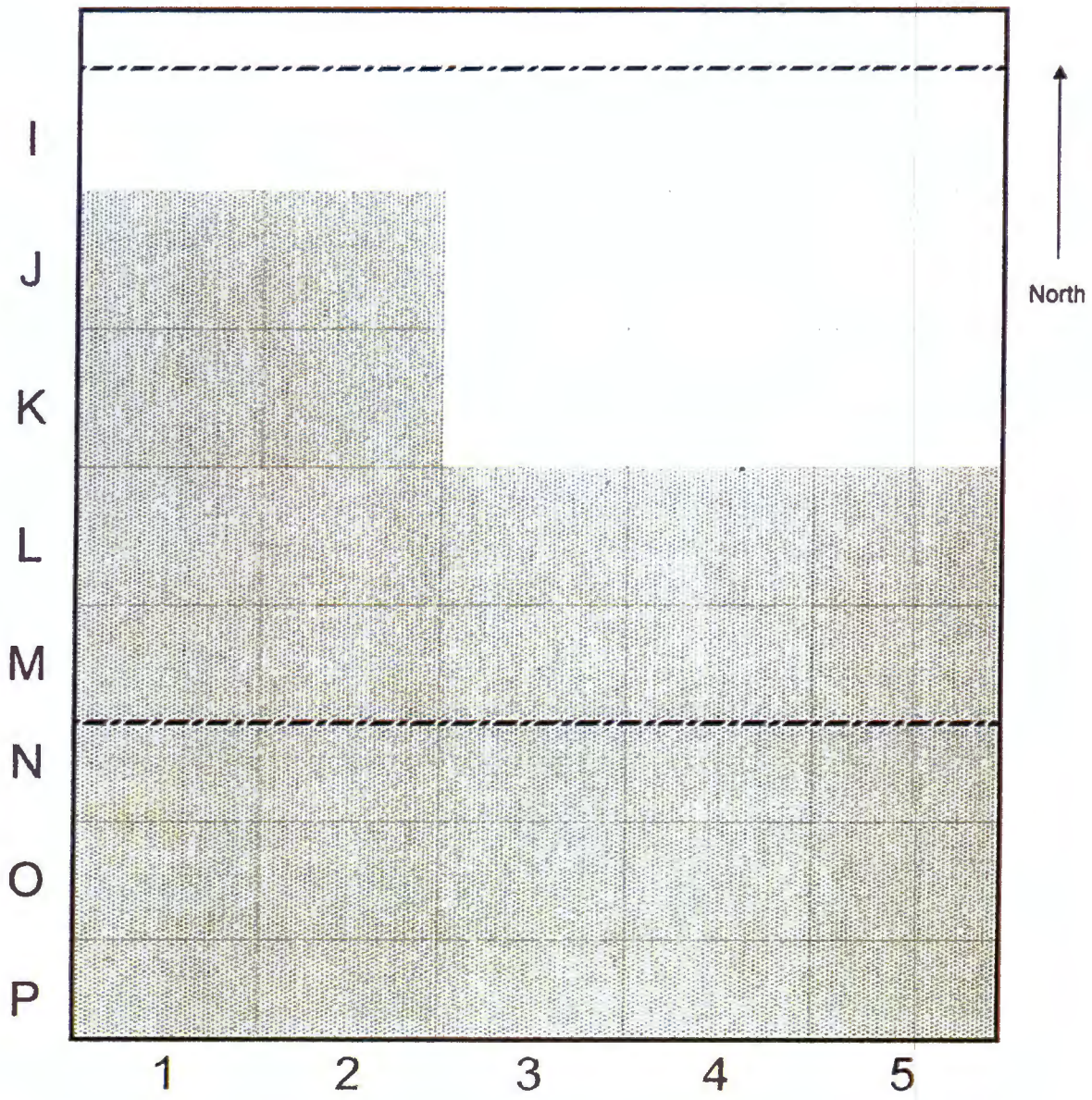


S/C: S013213A00

CQA Moisture Density Map Cell 9

05-016-074

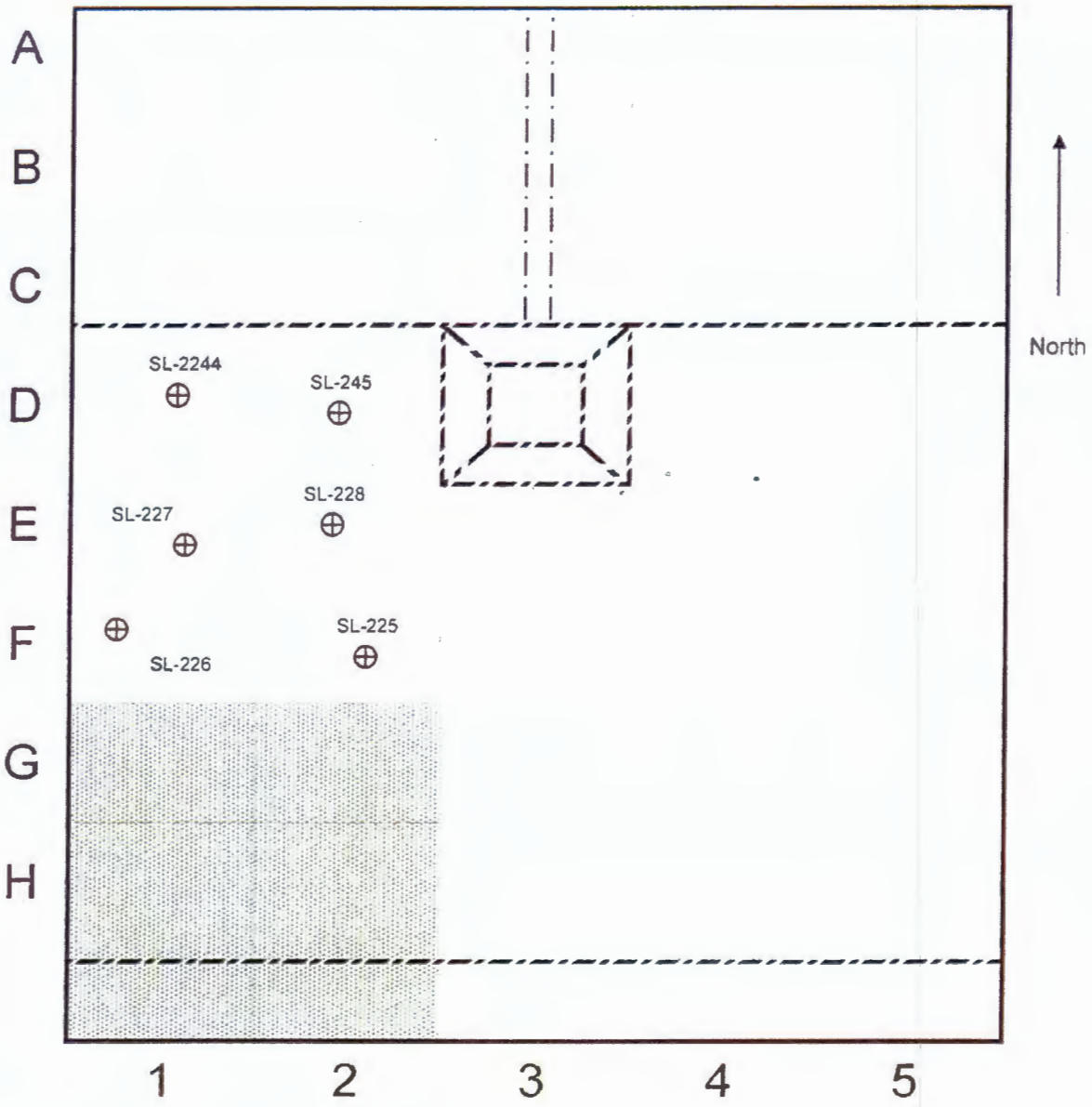
Date:	6/3/2010	Lift:	No. 6
Report:	5-16-81	Operator:	J. Schut
Map No:	6 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

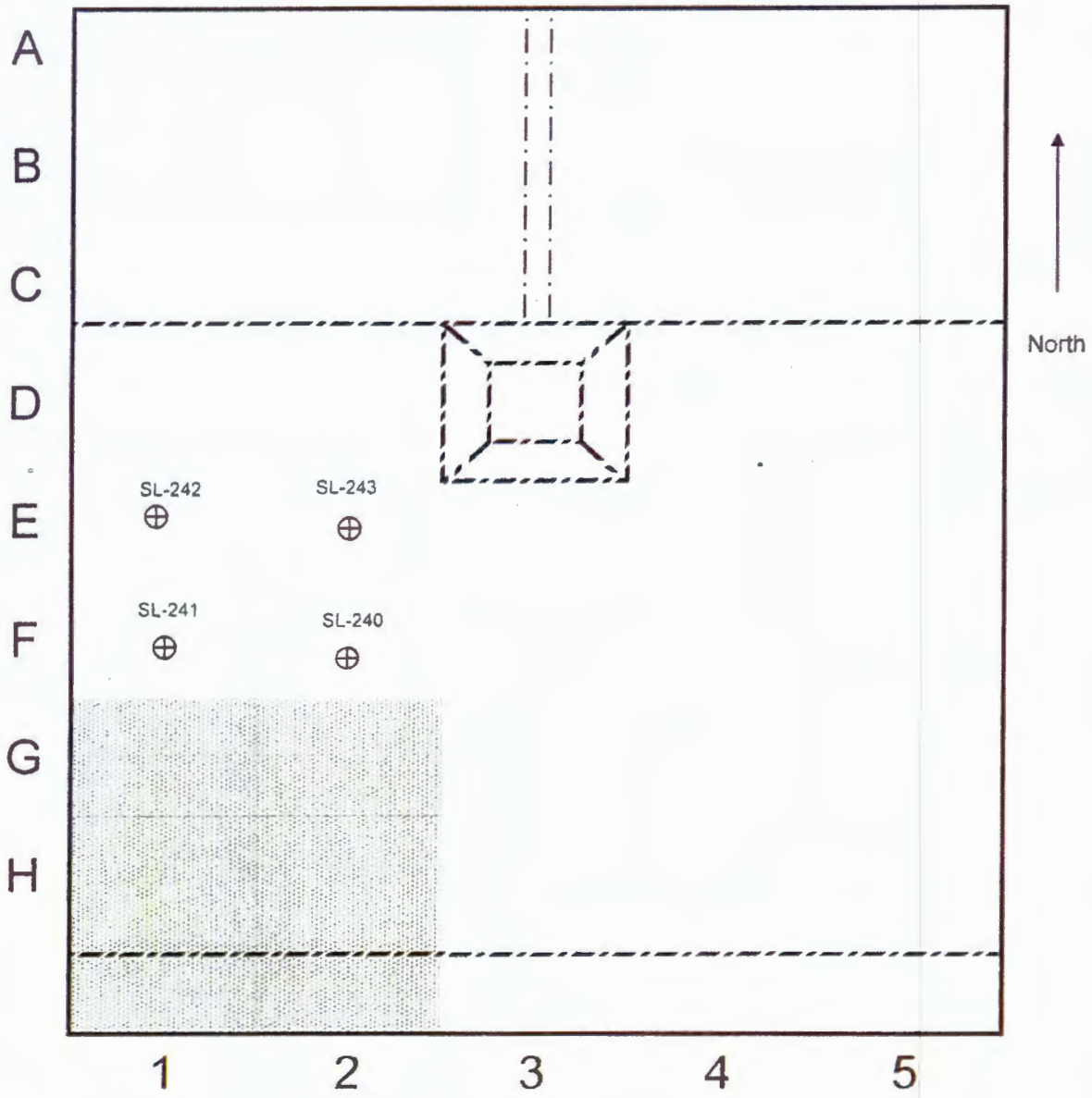
Date:	6/3/2010	Lift:	No. 1
Report:	5-16-81	Operator:	J. Schut
Map No:	7 of 8	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

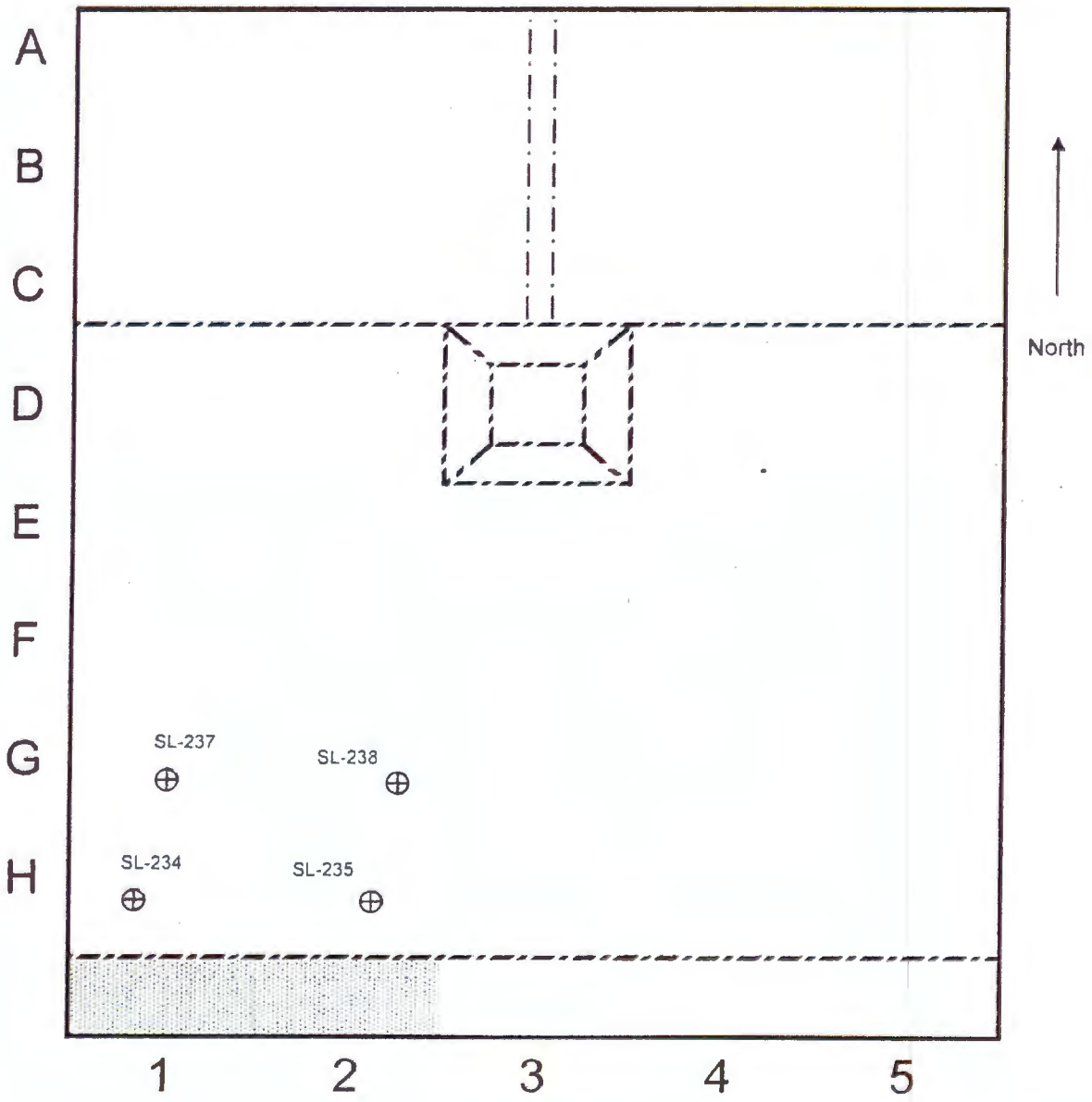
Date:	6/3/2010	Lift:	No. 2
Report:	5-16-81	Operator:	J. Schut
Map No.	8 of 10	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

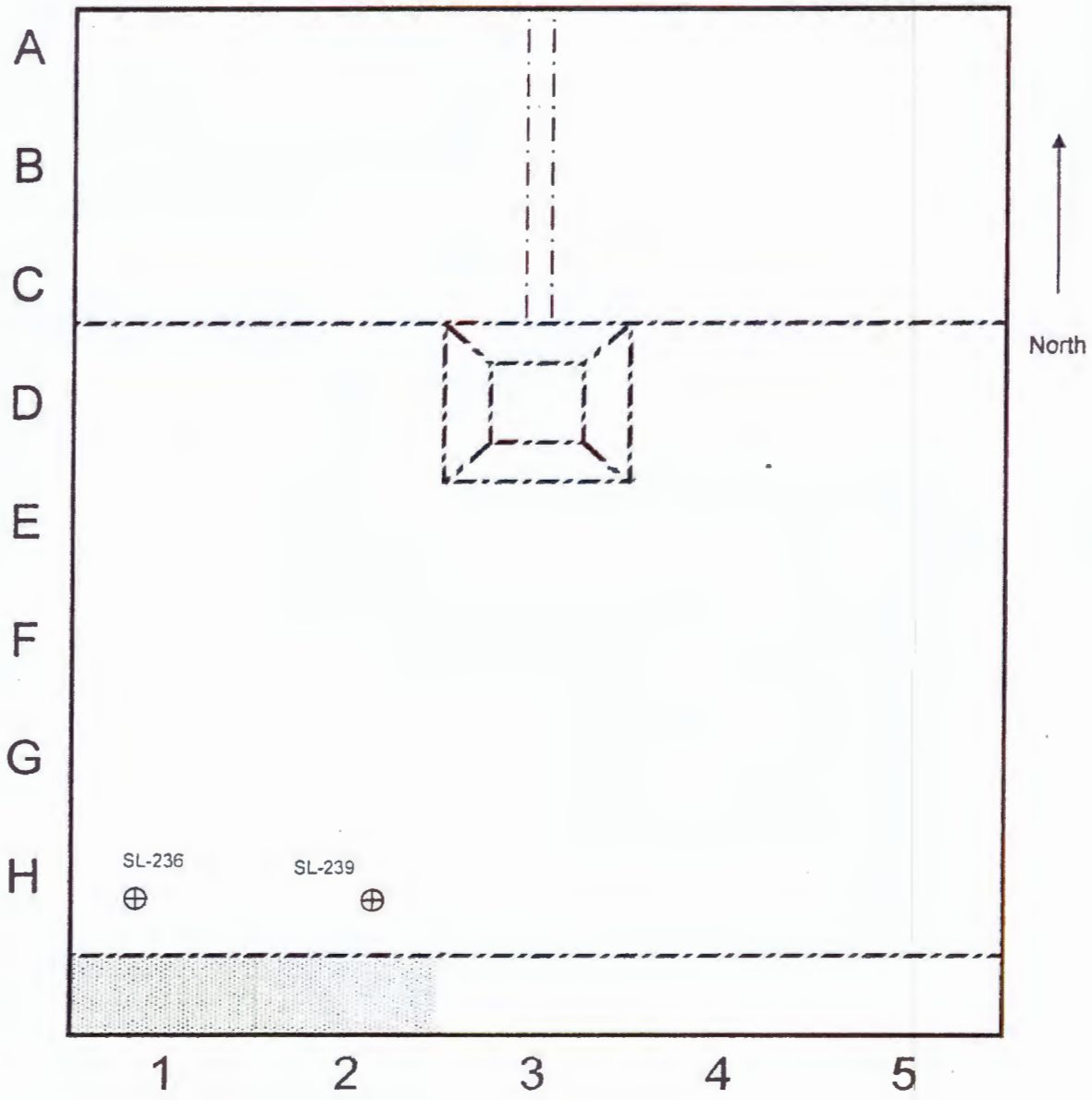
Date:	6/3/2010	Lift:	No. 3
Report:	5-16-81	Operator:	J. Schut
Map No:	9 of 10	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/3/2010	Lift:	No. 4
Report:	5-16-81	Operator:	J. Schut
Map No:	10 of 10	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-221
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	6/3/2010
Tested By:	J. Schut	Date	6/3/2010	Sampled By:	J. Schut
Reviewed By:	J. Voss	Date	6/4/2010	Date Received:	6/3/2010
Comments				Report No.:	05-016-079

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1	Mass of Proctor mold, W_1	3956.10 g
2	Mass of Proctor mold + sand, W_2	5394.20 g
3	Volume of mold, V_1	0.03 ft
4	Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.11 lb/ft^3

Calibration Cone

5	Mass of bottle + cone + sand (before use), W_3	6115.40 g
6	Mass of bottle + cone + sand (after use), W_4	4482.70 g
7	Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8	Mass of bottle + cone + sand (before use), W_6	6135.8 g
9	Mass of bottle + cone + sand (after use), W_8	3232.4 g
10	Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_{d\,(sand)}}$	0.0295 ft^3
11	Mass of gallon can, W_5	505.70 g
12	Mass of gallon can + moist soil, W_7	2294.00 g
13	Mass of gallon can + dry soil, W_9	2025.20 g
14	Moist unit weight of soil in field $= W_7 - W_5 / V_2$	133.86 lb/ft^3
15	Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17.7%
16	Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100))$	113.74 lb/ft^3
17.	Comparision moisture content =	16.6%
18.	Dry unit weight comparison =	111.5 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

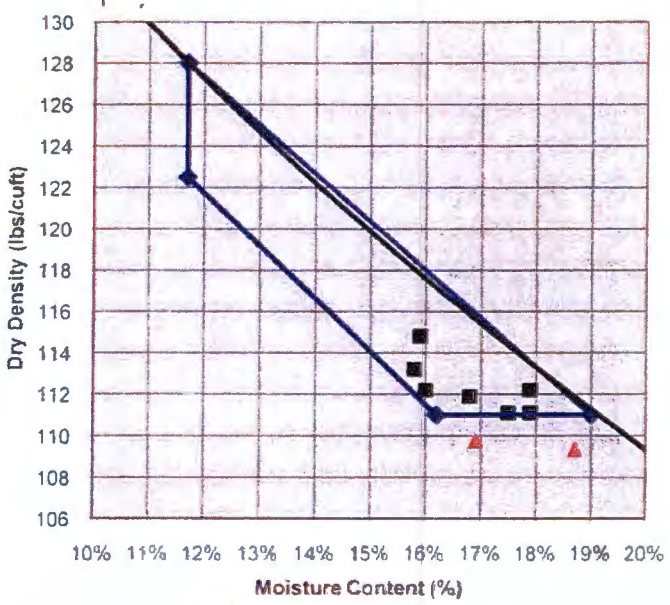
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/7/2010
Description: Admix Soil
Report: 05-016-083
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 637 Density Std 2220
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-247	2	8:30	3	112.2	17.9%	0.502	N/A	96.0%	D2	Pass
SL-248	2	8:35	3	113.2	15.8%	0.488	N/A	87.0%	D1	Pass
SL-249	4	8:50	3	114.8	15.9%	0.481	N/A	89.0%	J4	Pass
SL-250	4	8:55	3	111.1	17.5%	0.519	N/A	91.0%	J3	Pass
SL-251	5	9:00	3	109.4	18.7%	0.541	N/A	93.0%	J2	Fail
SL-252	5	9:10	3	111.1	17.9%	0.517	N/A	93.0%	I2	Pass
SL-253	5	9:21	3	111.9	16.8%	0.507	N/A	89.0%	H2	Pass
SL-254	5	9:26	3	109.8	16.9%	0.535	N/A	85.0%	H1	Fail
SL-255	4	11:47	3	109.4	18.7%	0.541	N/A	93.0%	G2	Fail
SL-254A	5	11:53	6	112.2	16.0%	0.499	N/A	87.0%	H1	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-247				
SL-248				
SL-249				
SL-250				
SL-251				
SL-252				
SL-253				
SL-254				
SL-255				
SL-254A				



Envirotech Engineering & Consulting, Inc

6/8/10
Date

FIELD DENSITY TEST (ASTM D-6938)

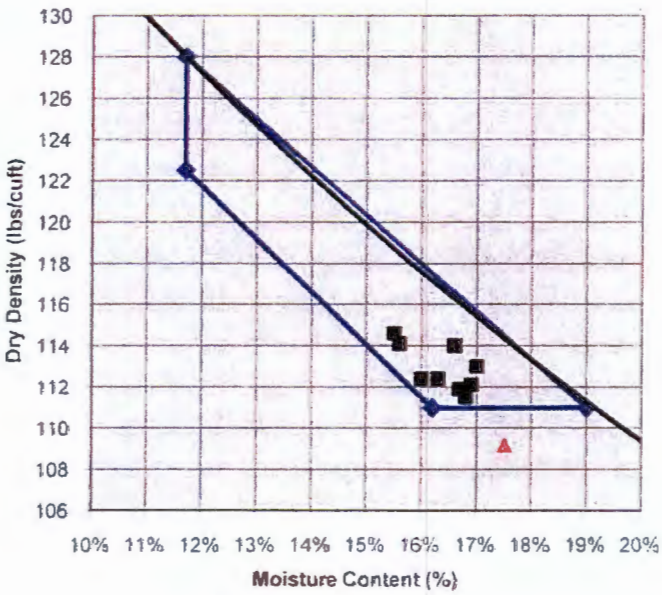
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/7/2010
Description: Admix Soil
Report: 05-016-083
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.
0

Model: 3430 Troxler ID: 27881
Moisture Std: 637 Density Std: 2220
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-256	4	12:05	3	109.2	17.5%	0.544	N/A	87.0%	G1	Fail
SL-256A	4	13:37	6	113.0	17.0%	0.492	N/A	93.0%	G1	Pass
SL-255A	4	13:41	6	112.4	16.3%	0.499	17.3%	88.0%	G2	Pass
SL-257	3	14:06	3	112.1	16.9%	0.504	N/A	91.0%	F2	Pass
SL-258	3	14:16	3	114.0	16.6%	0.478	N/A	94.0%	F1	Pass
SL-259	3	14:20	3	114.1	15.6%	0.477	N/A	88.0%	E1	Pass
SL-260	3	14:24	3	114.6	15.5%	0.472	N/A	89.0%	E2	Pass
SL-261	3	14:35	3	111.5	16.8%	0.511	N/A	89.0%	D2	Pass
SL-262	3	14:39	3	111.9	16.7%	0.506	N/A	89.0%	D1	Pass
SL-251A	5	14:57	6	112.4	16.0%	0.499	N/A	87.0%	J2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-256				
SL-256A				
SL-255A	SC	2254.2	1995.8	505.6
SL-257				
SL-258				
SL-259				
SL-260				
SL-261				
SL-262				
SL-251A				



irotech Engineering & Consulting, Inc

6/8/10
Date

FIELD DENSITY TEST (ASTM D-6938)

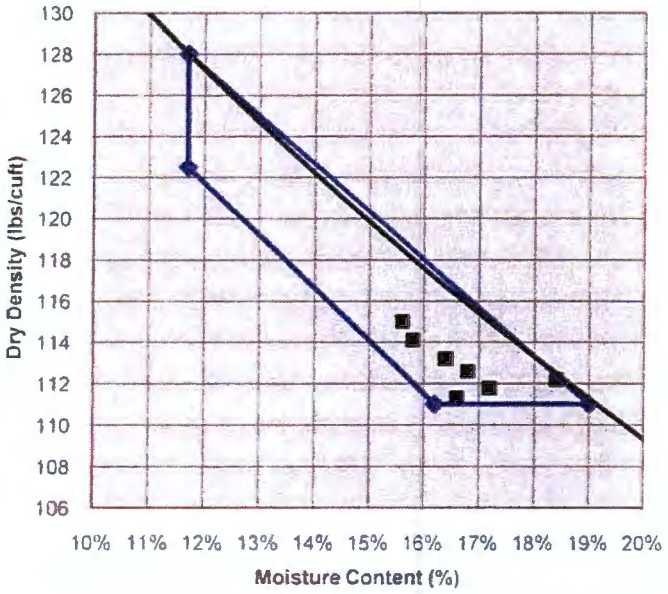
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/7/2010
Description: Admix Soil
Report: 05-016-083
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model 3430 Troxler ID: 27881
Moisture Std: 637 Density Stc 2220
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-263	5	15:36	3	111.3	16.6%	0.515	N/A	87.0%	J3	Pass
SL-264	5	15.40	3	114.1	15.8%	0.478	N/A	89.0%	J4	Pass
SL-265	5	15:45	3	112.6	16.8%	0.497	N/A	91.0%	J5	Pass
SL-266	6	16:08	3	112.2	18.4%	0.503	N/A	99.0%	J2	Pass
SL-267	6	16:12	3	111.8	17.2%	0.507	N/A	92.0%	I2	Pass
SL-268	6	16:16	3	115.0	15.6%	0.466	N/A	90.0%	H2	Pass
SL-269	6	16:19	3	113.2	16.4%	0.489	N/A	91.0%	H1	Pass
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-263				
SL-264				
SL-265				
SL-266				
SL-267				
SL-268				
SL-269				



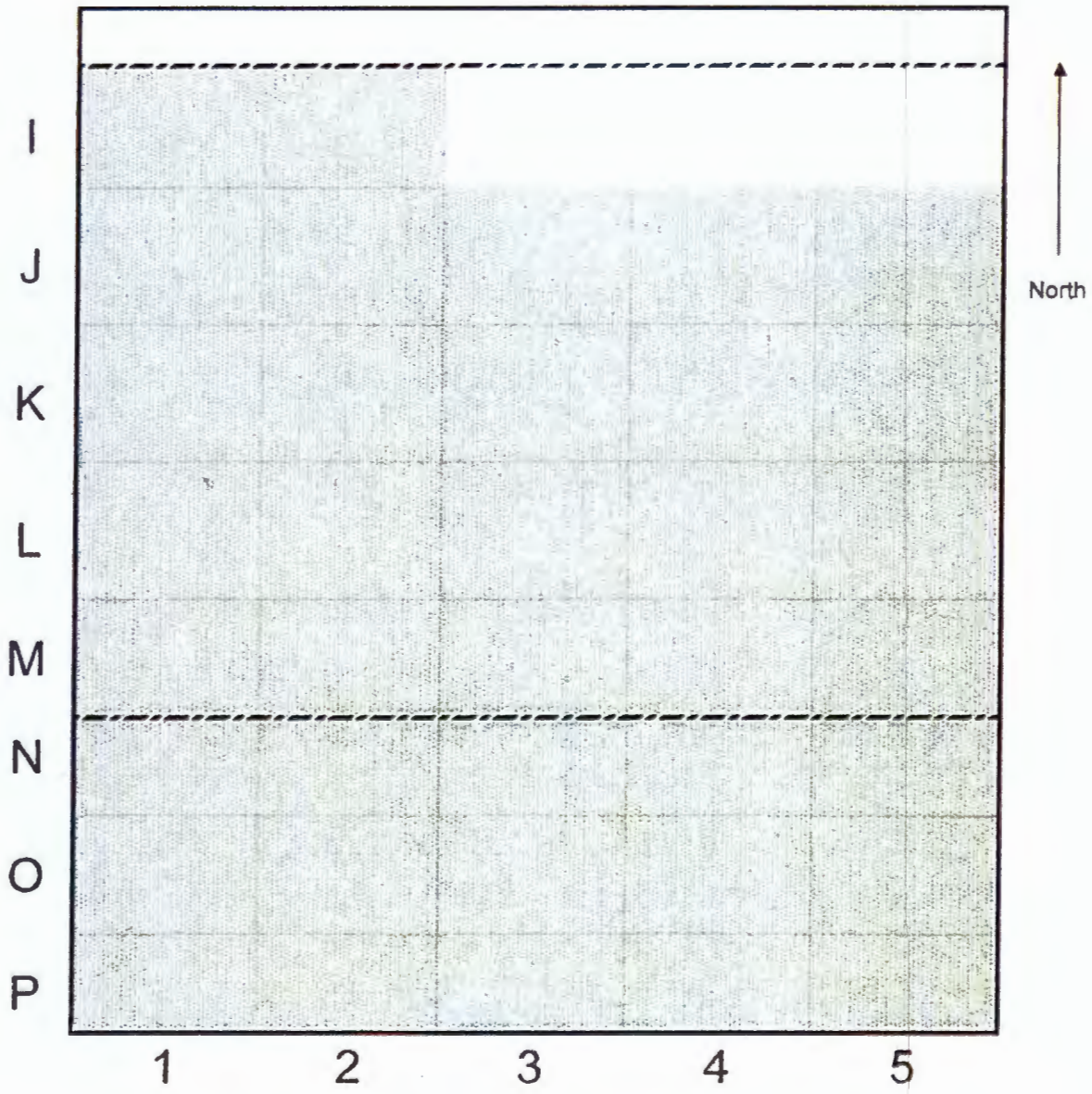
irotech Engineering & Consulting Inc

6/14/10
Date

S/C S013213A00

CQA Moisture Density Map Cell 9

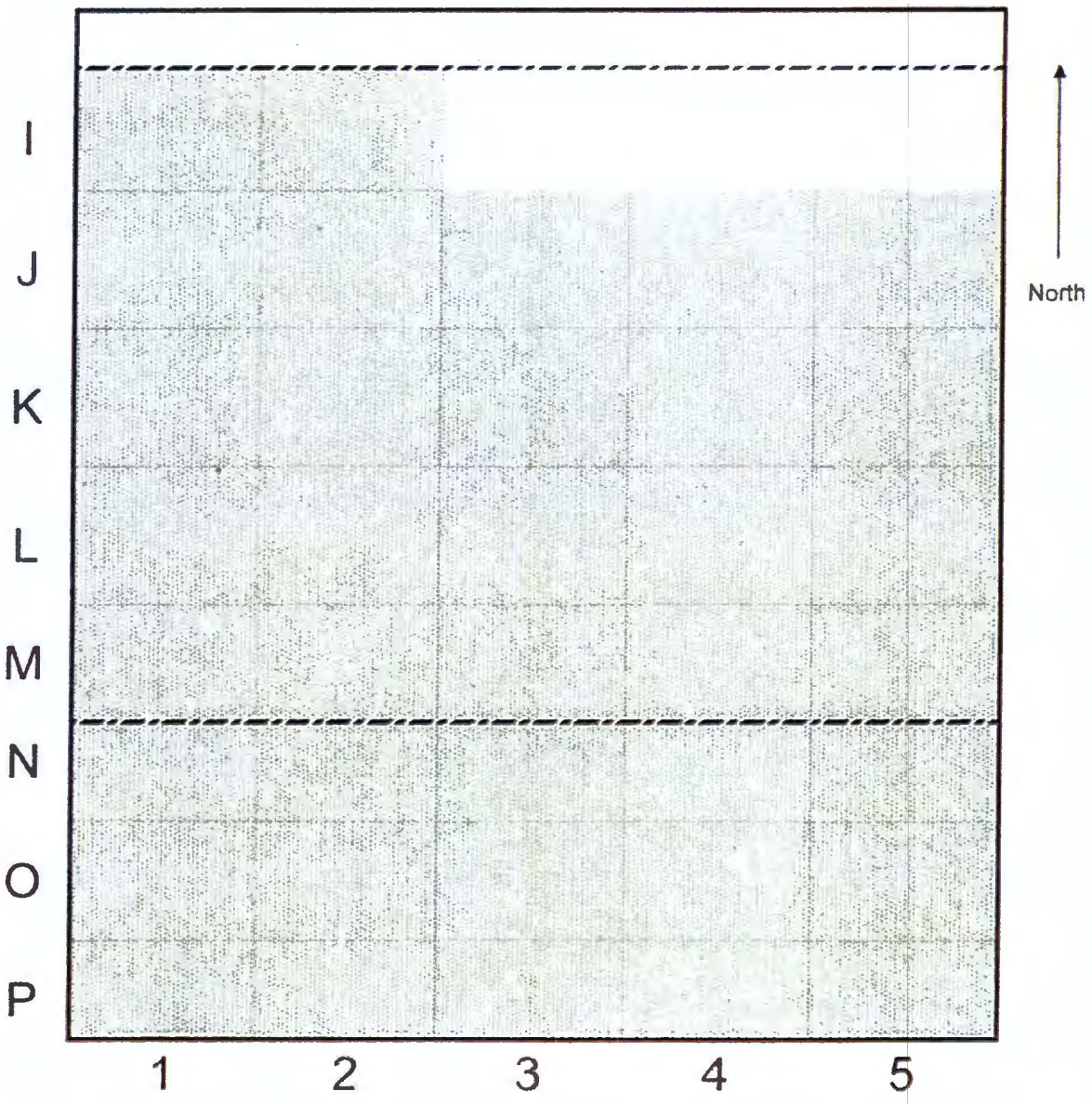
Date	6/7/2010	Lift	No 1
Report	05-016-083	Operator	J Schut
Map No	1 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C. S013213A00

CQA Moisture Density Map Cell 9

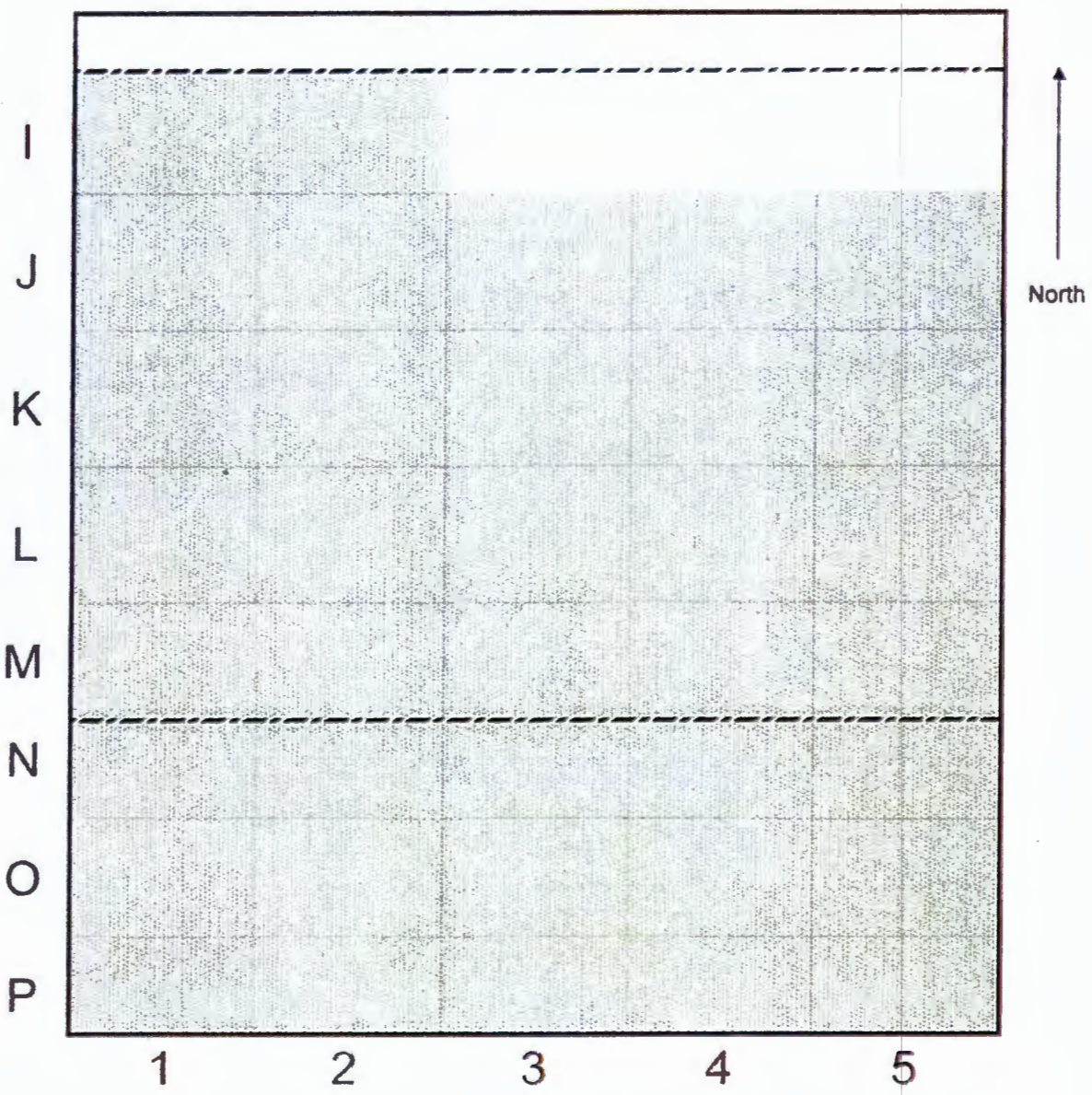
Date	6/7/2010	Lift:	No. 2
Report:	05-016-083	Operator	J. Schut
Map No:	2 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes.	



S/C S013213A00

CQA Moisture Density Map Cell 9

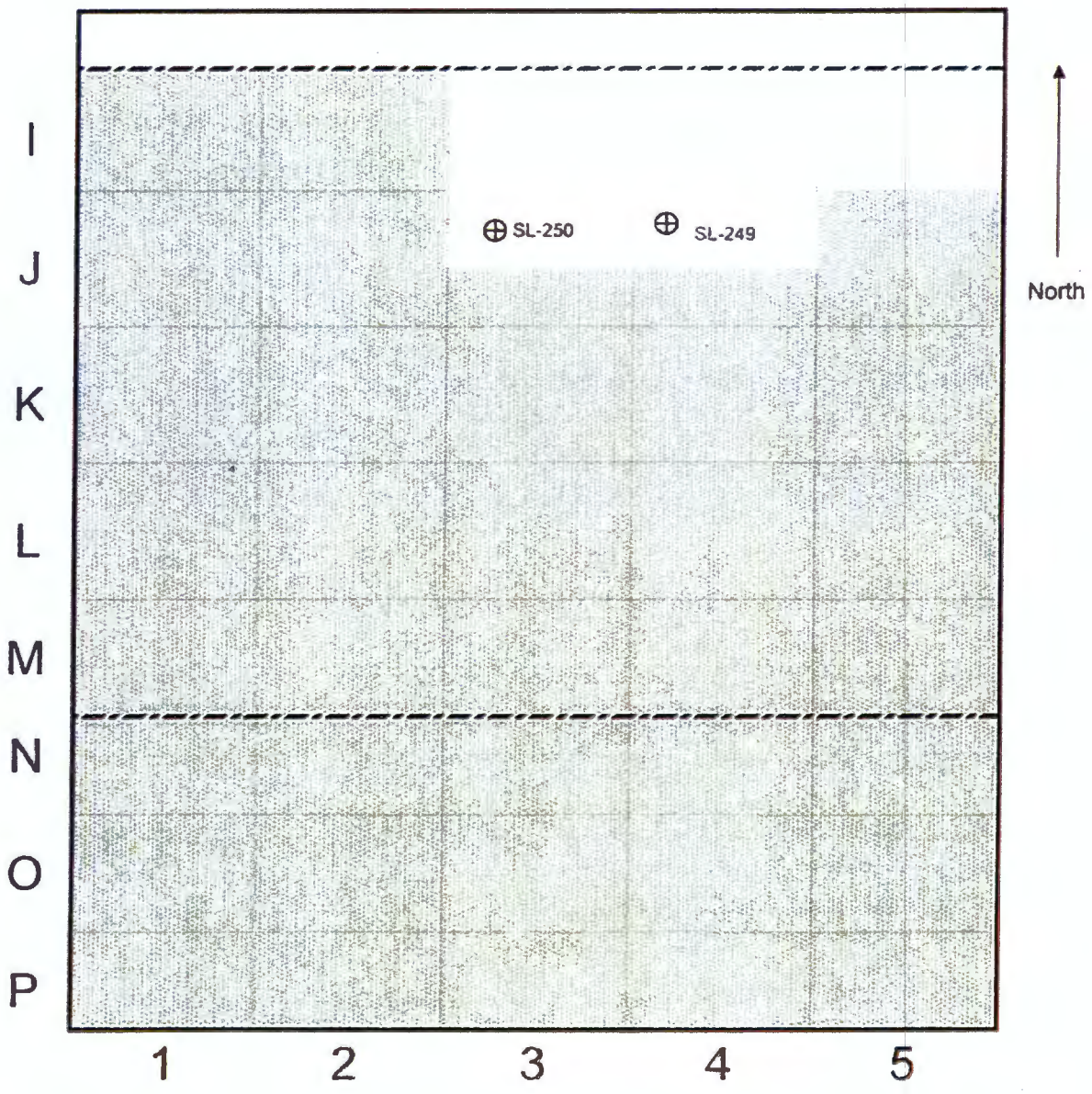
Date:	6/7/2010	Lift:	No 3
Report:	05-016-083	Operator	J. Schut
Map No:	3 of 12	Material:	Admix
Grid	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

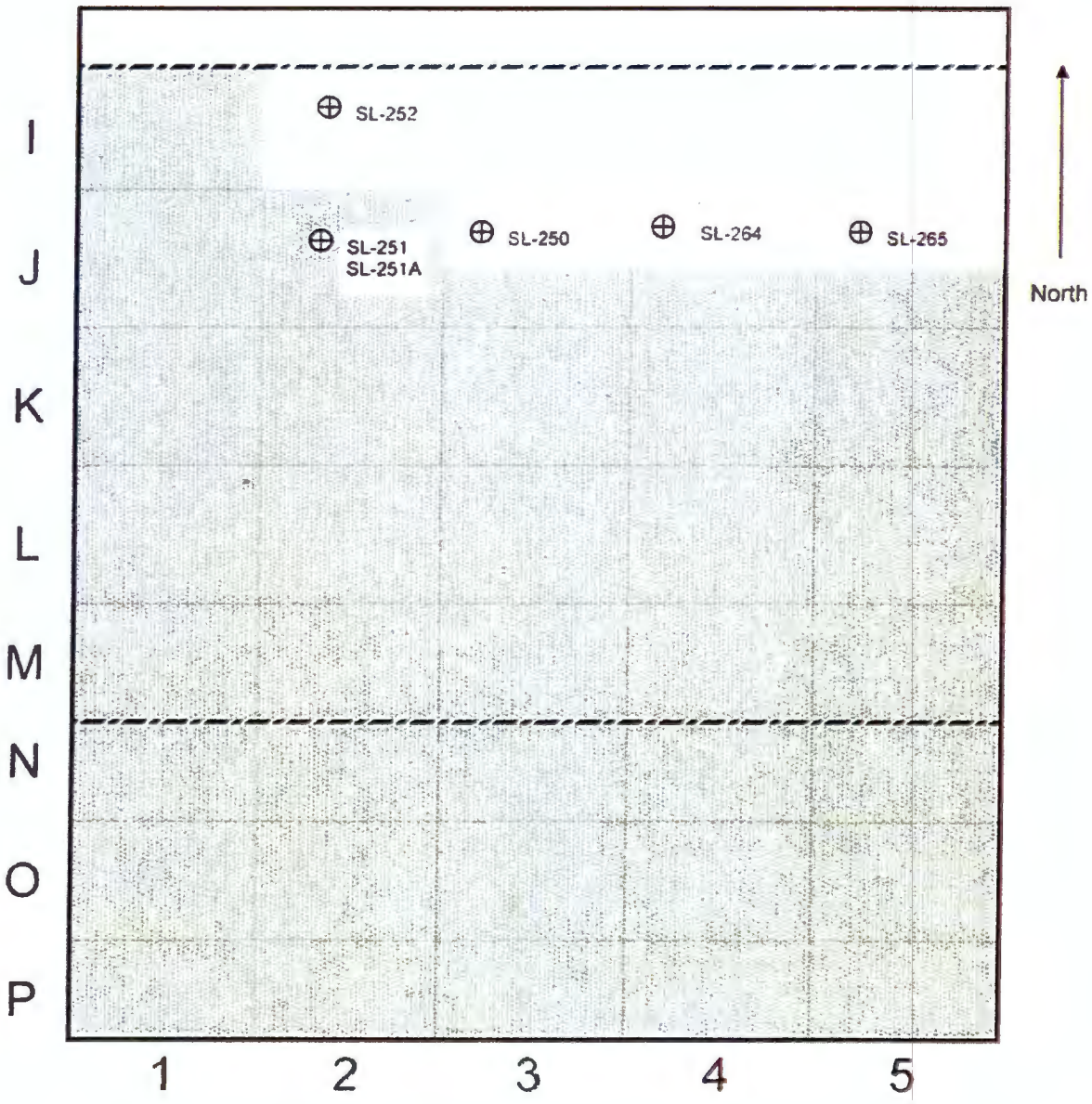
Date	6/7/2010	Lift	No 4
Report:	05-016-083	Operator:	J Schut
Map No.	4 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

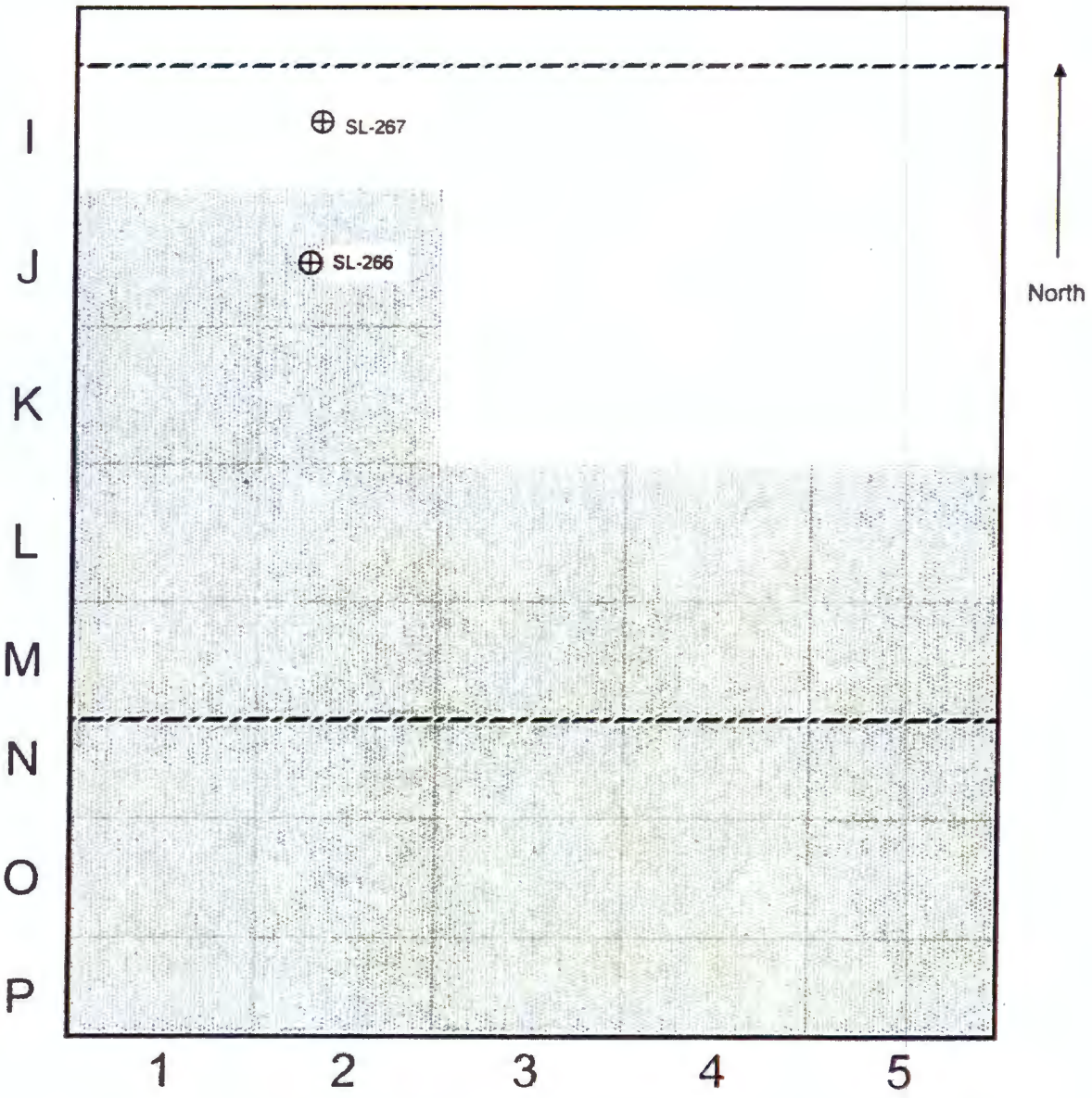
Date	6/7/2010	Lift	No 5
Report	05-016-083	Operator	J. Schut
Map No	5 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

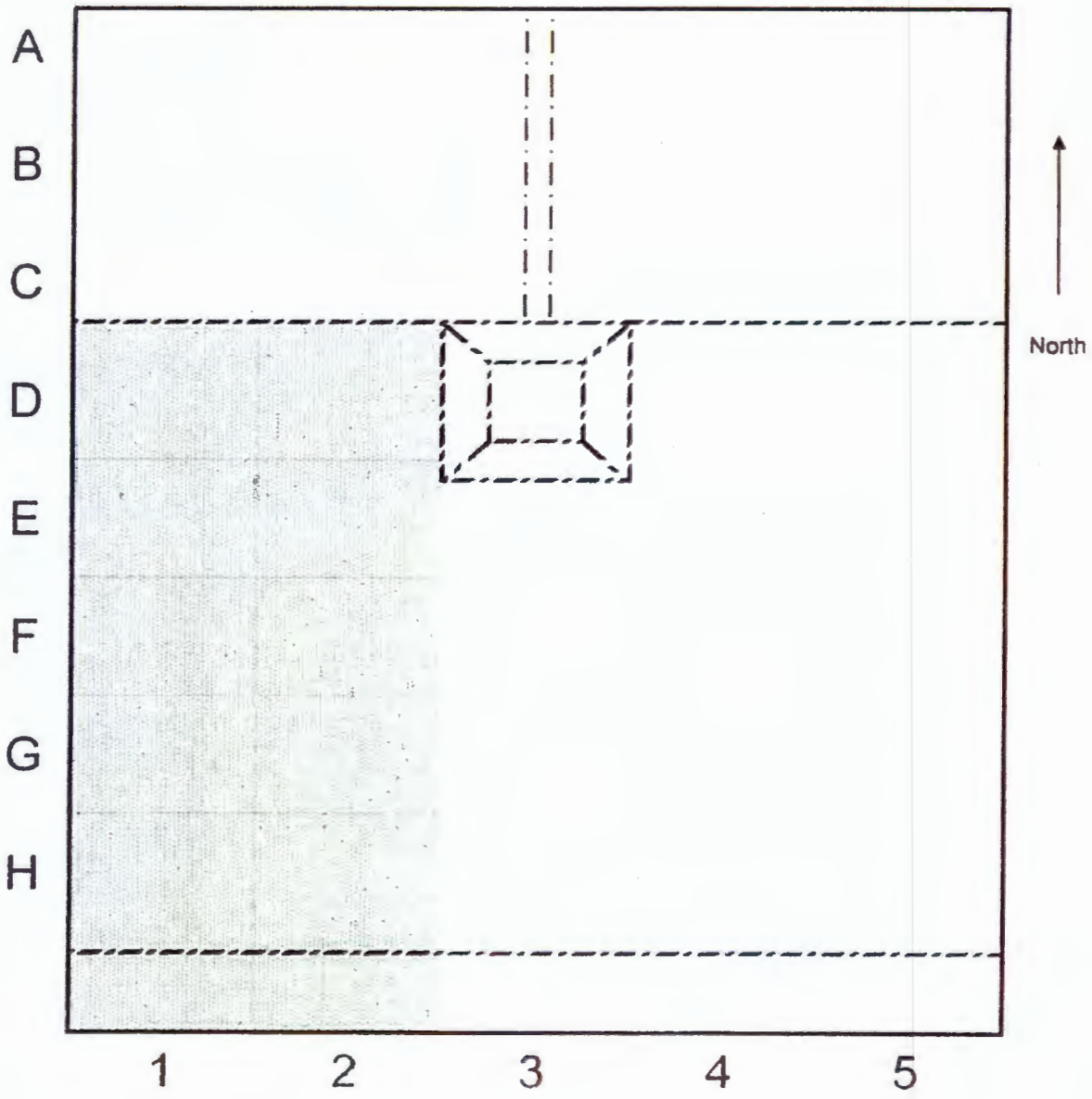
Date:	6/7/2010	Lift:	No. 6
Report:	05-016-083	Operator:	J. Schut
Map No:	6 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

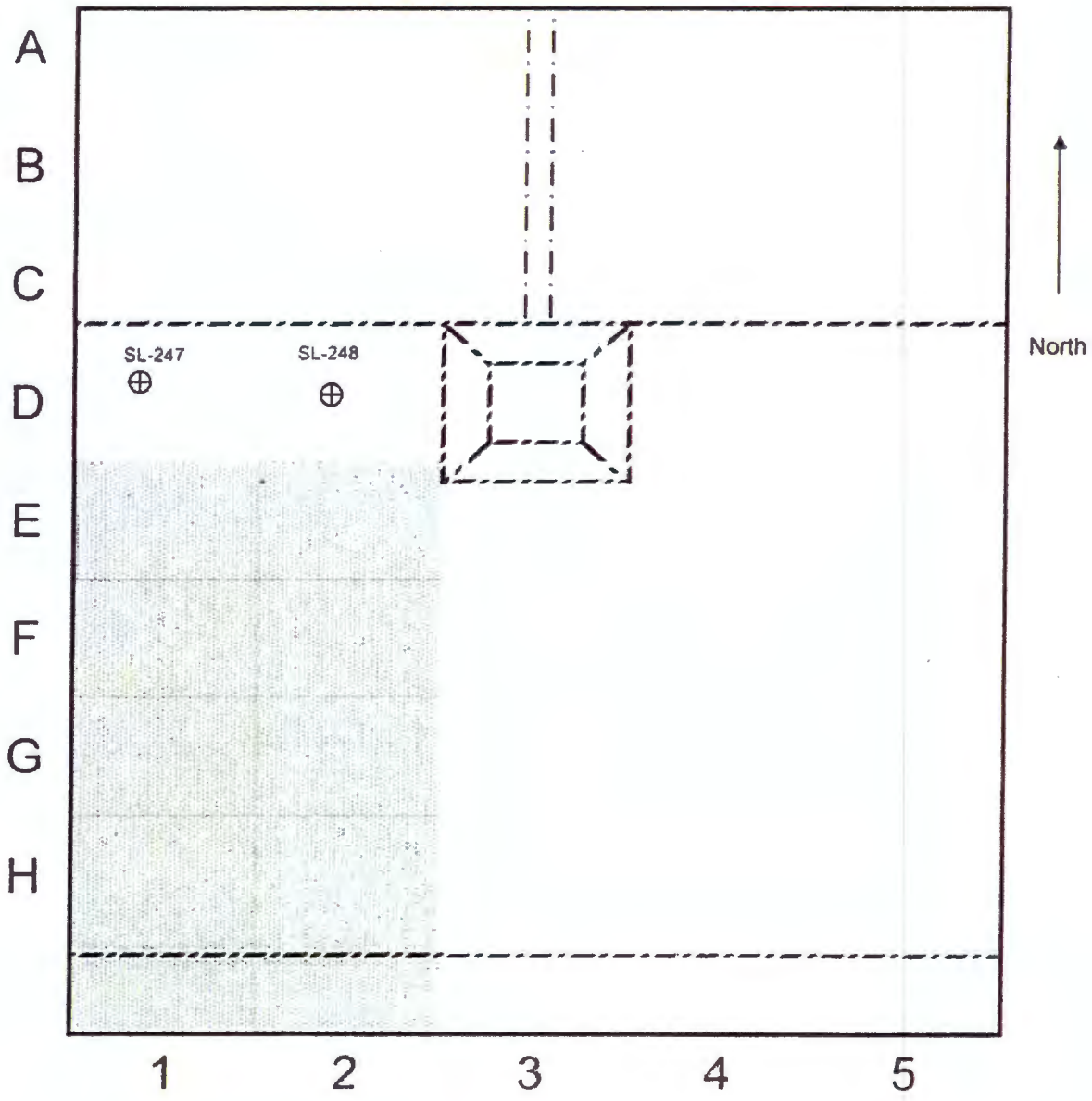
Date	6/7/2010	Lift	No 1
Report	05-016-083	Operator	J. Schut
Map No	7 of 12	Material	Admix
Grid.	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

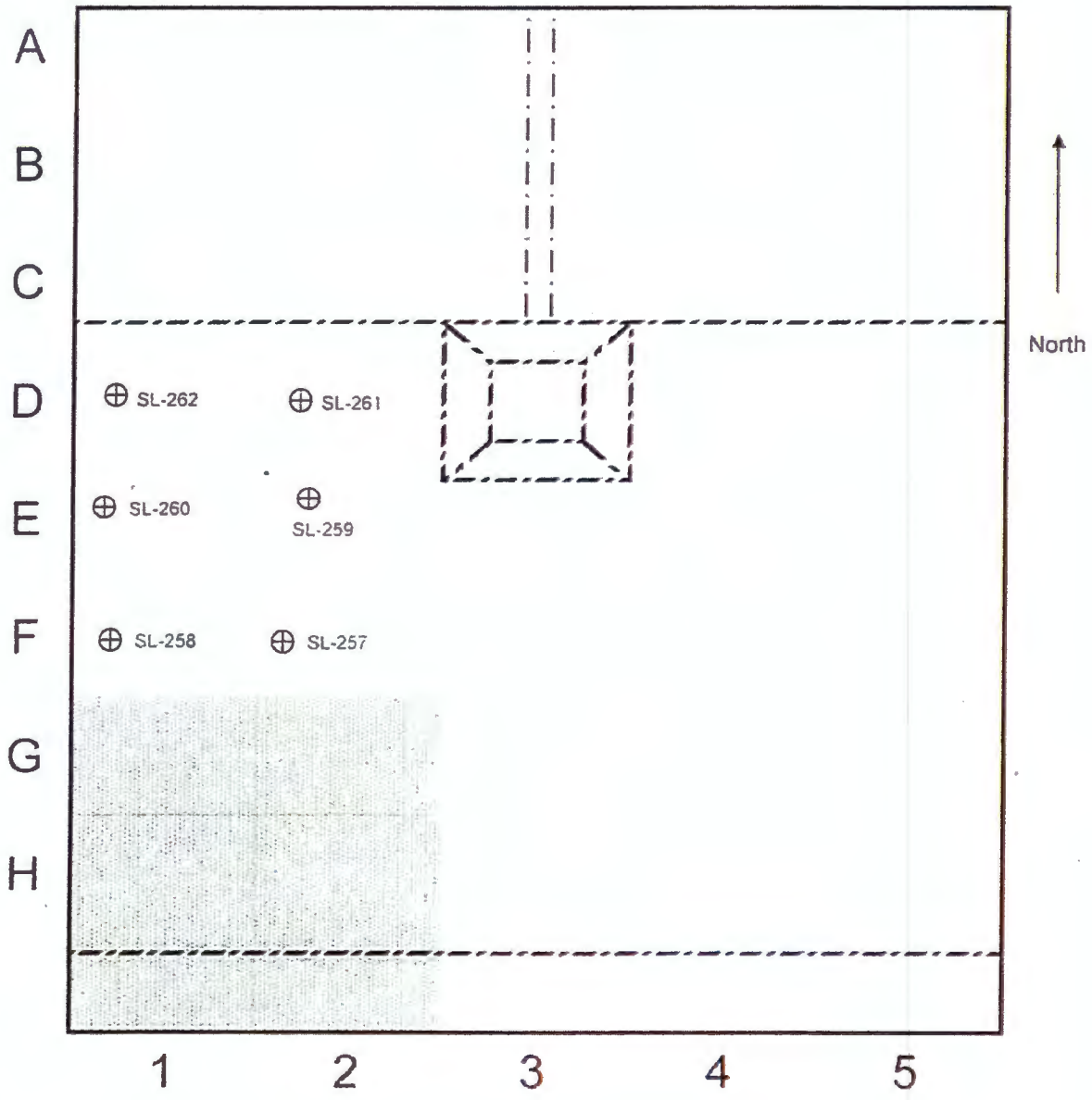
Date:	6/7/2010	Lift:	No 2
Report:	05-016-083	Operator	J Schut
Map No:	8 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

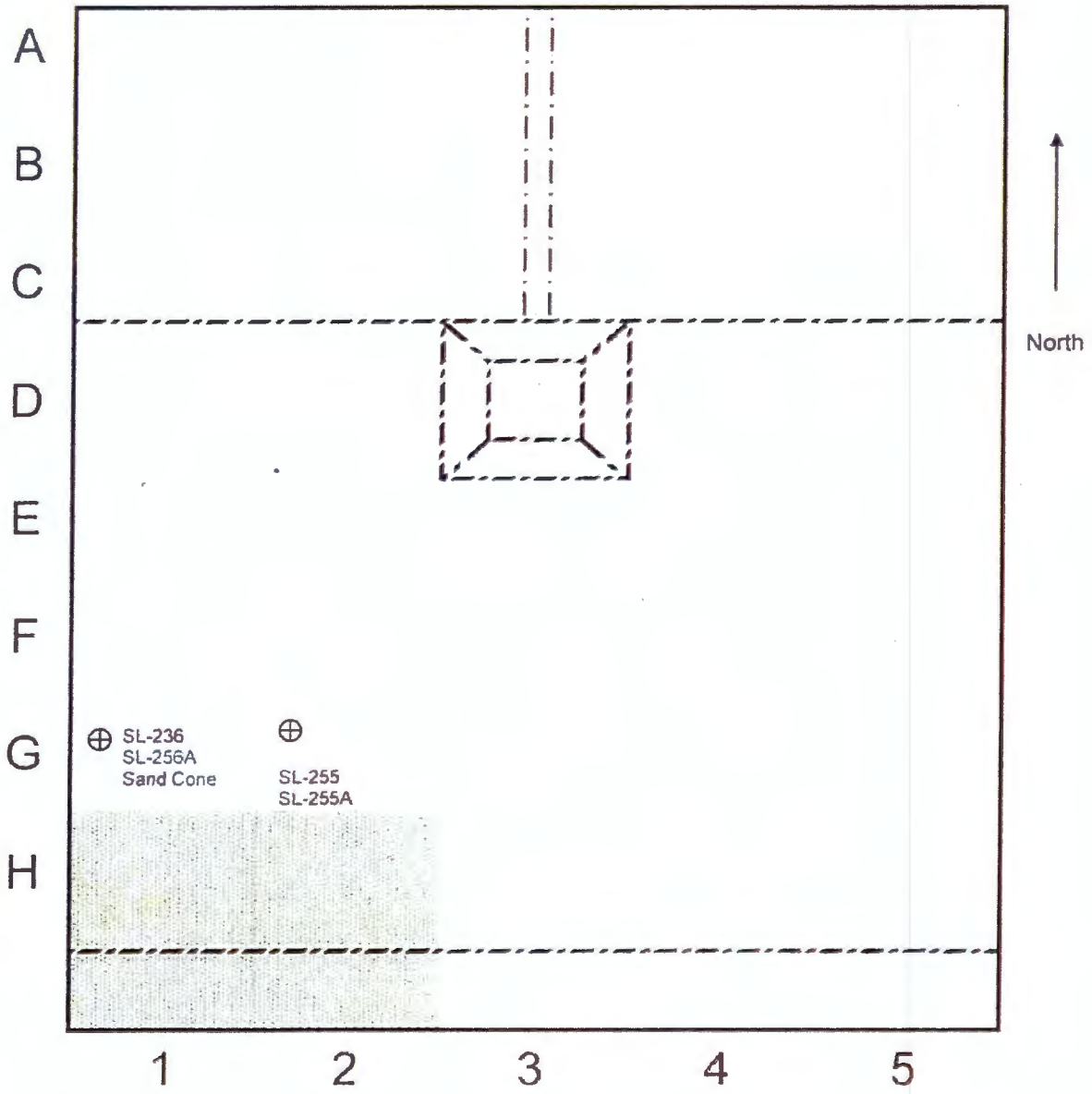
Date:	6/7/2010	Lift:	No 3
Report:	05-016-083	Operator:	J. Schut
Map No:	9 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

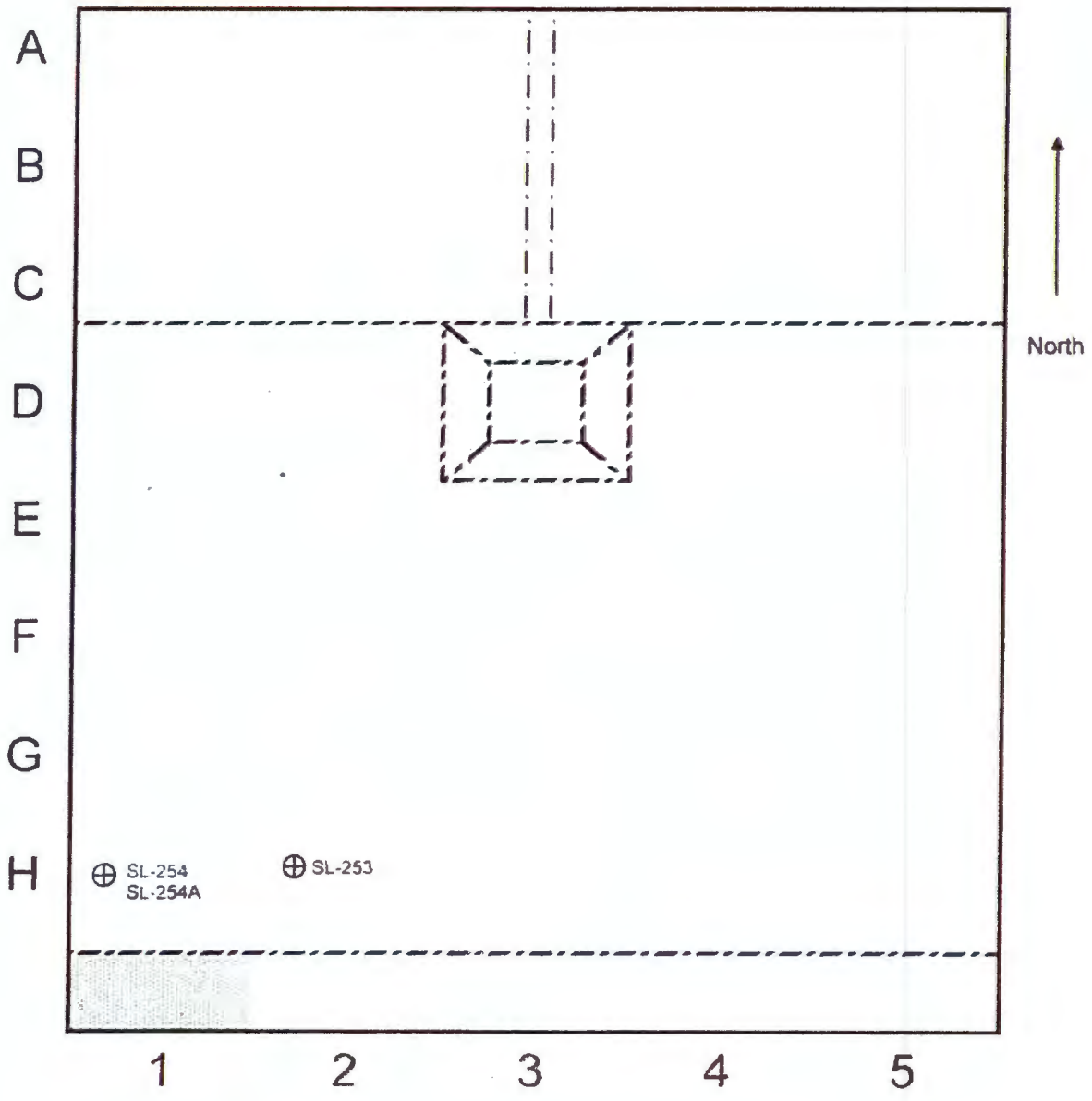
Date:	6/7/2010	Lift:	No 4
Report:	05-016-083	Operator	J. Schut
Map No.	10 of 12	Material	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

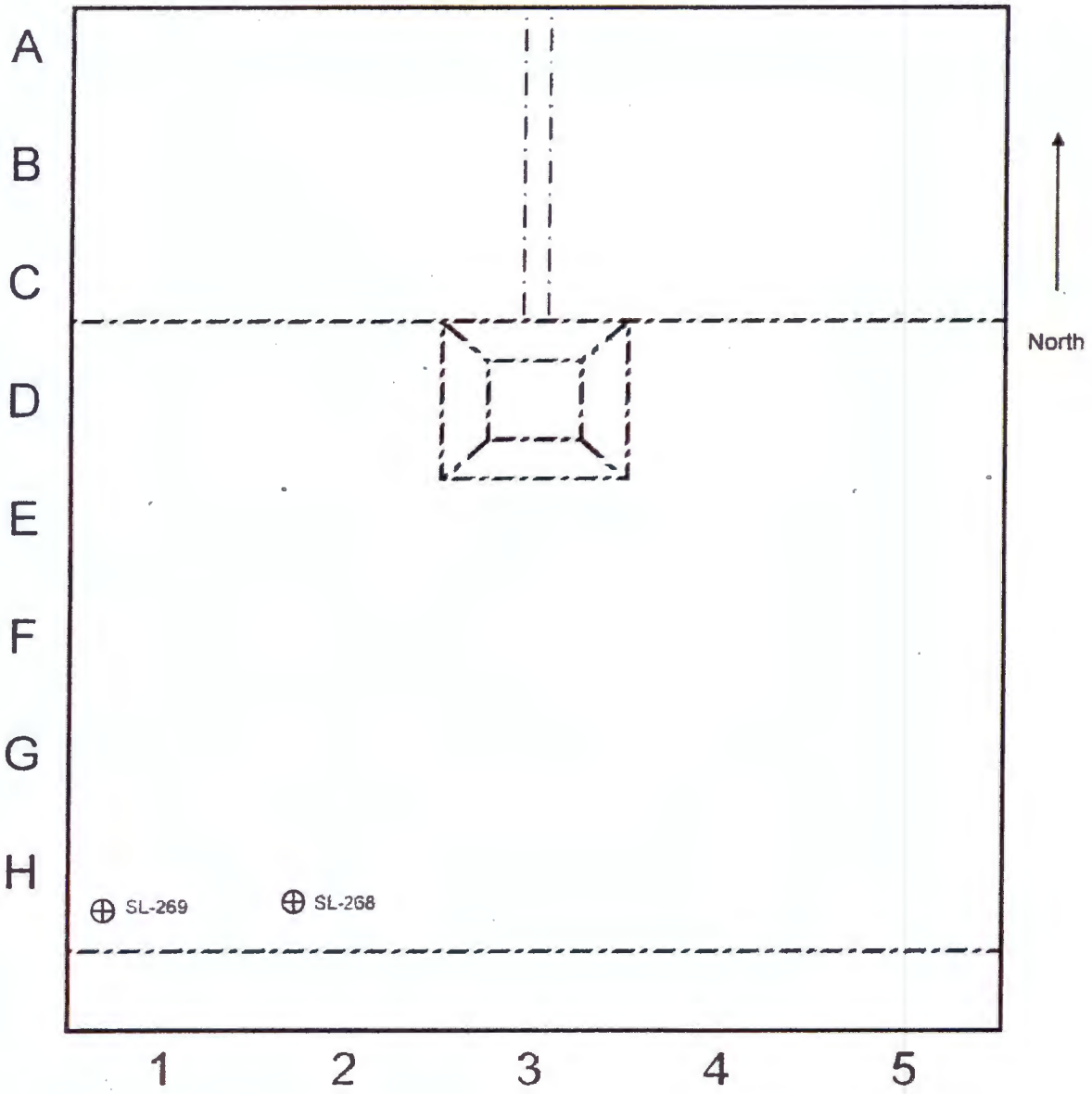
Date	6/7/2010	Lift	No 5
Report:	05-016-083	Operator	J. Schut
Map No:	11 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

Date	6/7/2010	Lift	No 6
Report	05-016-083	Operator	J. Schut
Map No	12 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580 234-8780 | Fax 580 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID.	SL-255A
Project	S013213A00			Sample Description:	Admix Soil
Project Location	ERDF Cells 9-10			Sampling Date.	6/7/2010
Tested By	L. Hay	Date	6/7/2010	Sampled By	L. Hay
Reviewed By:	J. Voss	Date	6/8/2010	Date Received	6/7/2010
Comments				Report No..	05-016-083

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1 Mass of Proctor mold, W_1	3956.10 g
2. Mass of Proctor mold + sand, W_2	5394.20 g
3 Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95 11 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6115.40 g
6. Mass of bottle + cone + sand (after use), W_4	4482.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6485.3 g
9. Mass of bottle + cone + sand (after use), W_8	3657.4 g
10 Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0277 ft^3
11. Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2254.20 g
13. Mass of gallon can + dry soil, W_9	1995.80 g
14 Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	139 15 lb/ft^3
15 Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	17 3%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	118 59 lb/ft^3
17. Comparision moisture content =	16 3%
18. Dry unit weight comparison =	112.4 lb/ft^3

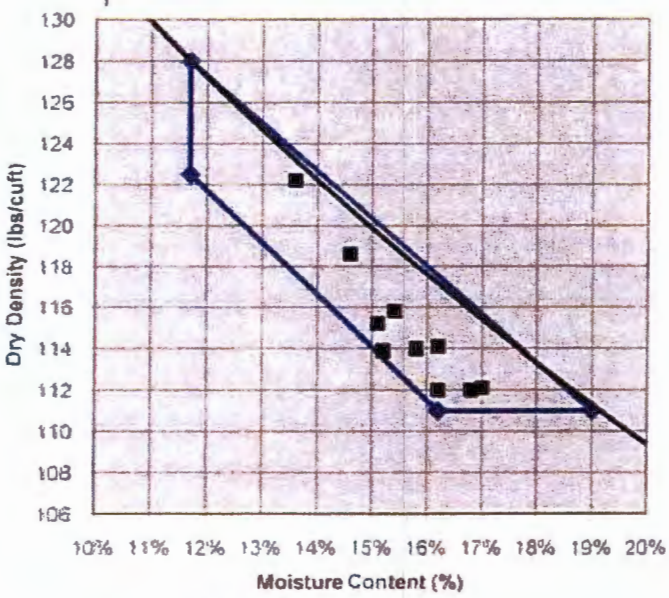
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID:	27881
Test Date	6/8/2010	Moisture Std	648	Density Std	2233
Description	Admix Soil	Offsets.	Moisture -	Density	-
Report	05-016-084	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-270	6	7:46	3	118.6	14.6%	0.422	N/A	93.0%	K5	Pass
SL-271	6	7:50	3	115.8	15.4%	0.455	N/A	91.0%	K4	Pass
SL-272	6	7:54	3	122.2	13.6%	0.379	N/A	97.0%	K3	Pass
SL-273	5	8:10	3	112.0	16.8%	0.505	N/A	90.0%	G2	Pass
SL-274	5	8:16	3	115.2	15.1%	0.464	N/A	88.0%	G1	Pass
SL-275	6	8:43	3	112.1	17.0%	0.504	N/A	91.0%	I2	Pass
SL-276	6	8:46	3	114.0	15.8%	0.479	16.6%	89.0%	J2	Pass
SL-277	6	14:29	3	114.1	16.2%	0.477	N/A	92.0%	J3	Pass
SL-278	6	14:34	3	113.9	15.2%	0.48	N/A	86.0%	J4	Pass
SL-279	6	14:40	3	112.0	16.2%	0.505	N/A	87.0%	J5	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-270				
SL-271				
SL-272				
SL-273				
SL-274				
SL-275				
SL-276	SC	2031.4	1795.8	372.3
SL-277				
SL-278				
SL-279				



nvirotech Engineering & Consulting, Inc

6/10/10
Date

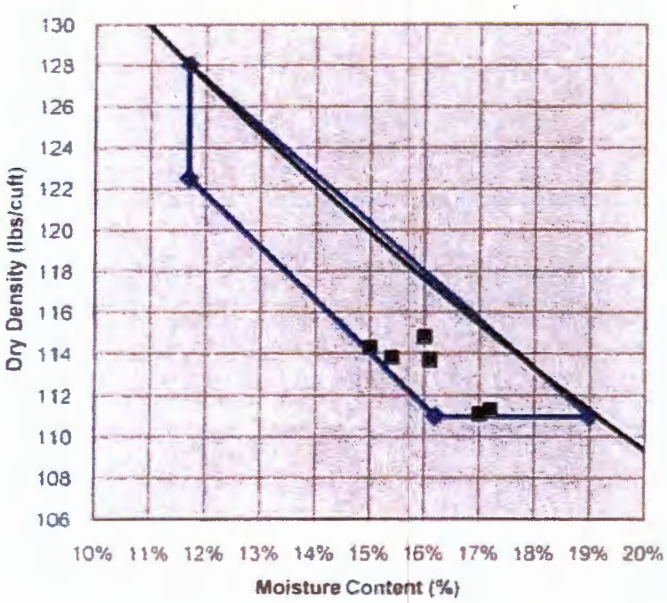
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/8/2010	Moisture Std	648	Density Std	2233
Description	Admix Soil	Offsets:	Moisture -	Density	-
Report	05-016-084	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				
	0				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-280	4	15:46	3	114.8	16.0%	0.468	N/A	92.0%	G1	Pass
SL-281	4	15.49	6	113.8	15.4%	0.481	N/A	86.0%	G1	Pass
SL-282	4	15 52	6	113.7	16.1%	0.483	N/A	90.0%	G2	Pass
SL-283	4	15:56	3	114.3	15.0%	0.474	N/A	85.0%	F2	Pass
SL-284	4	16.00	3	111.1	17.0%	0.517	N/A	89.0%	F1	Pass
SL-285	4	16 03	3	111.3	17.2%	0.515	N/A	90.0%	E1	Pass
							N/A		E2	
							N/A		D2	
							N/A		D1	
							N/A		J2	

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-280				
SL-281				
SL-282				
SL-283				
SL-284				
SL-285				



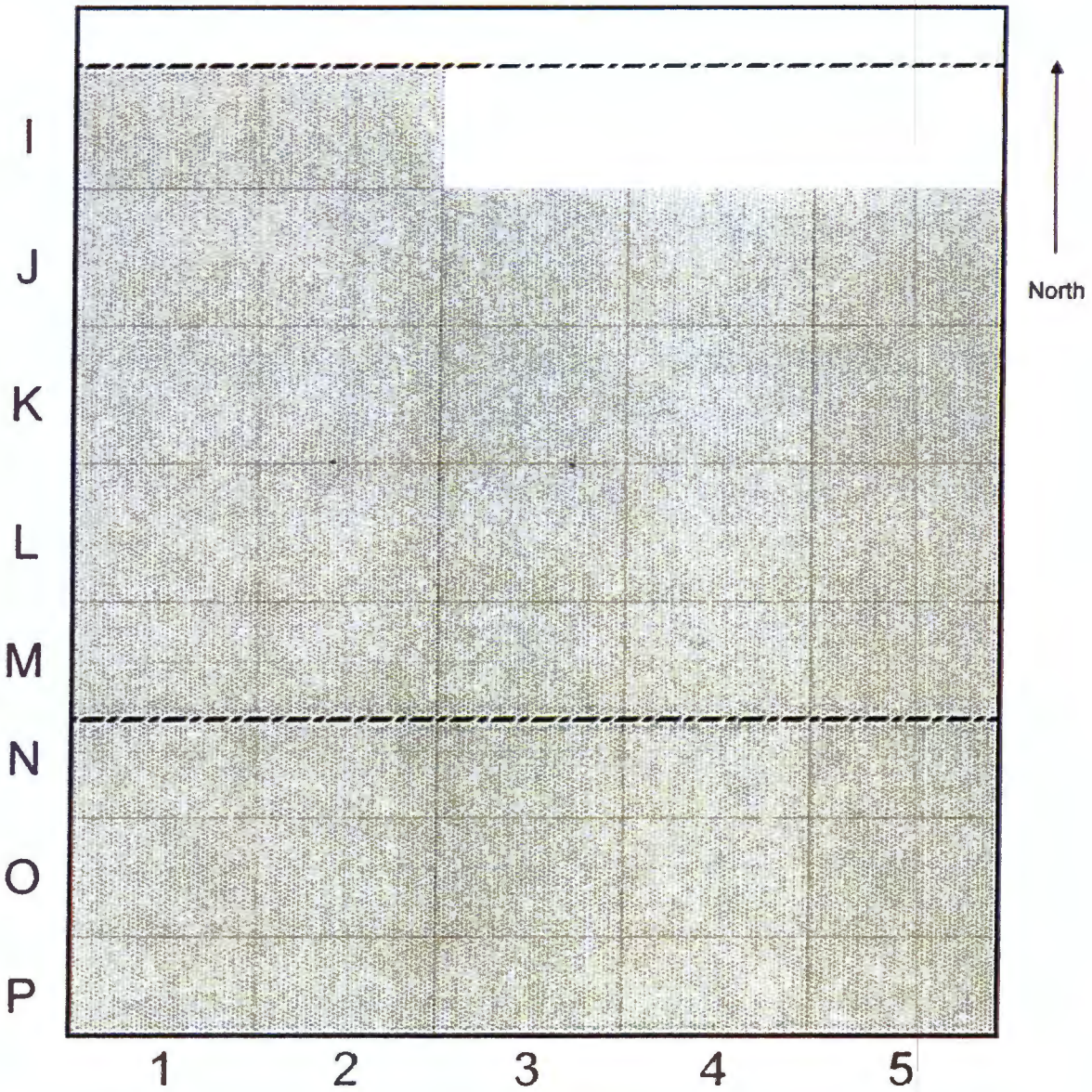
Envirotech Engineering & Consulting, Inc

6/10/10
Date

S/C. S013213A00

CQA Moisture Density Map Cell 9

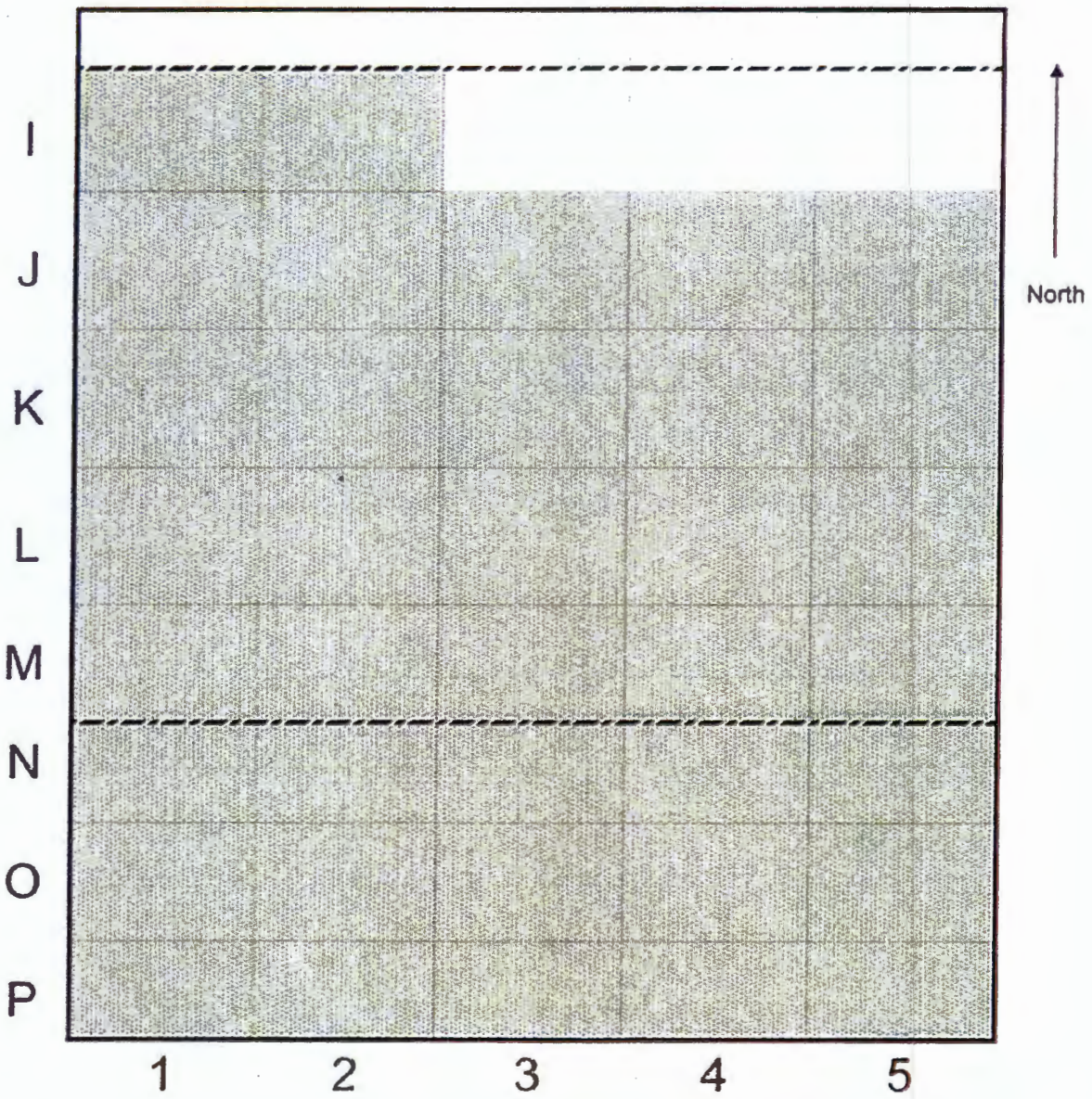
Date:	6/7/2010	Lift:	No. 1
Report:	05-016-083	Operator:	J. Schut
Map No.	1 of 12	Material:	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

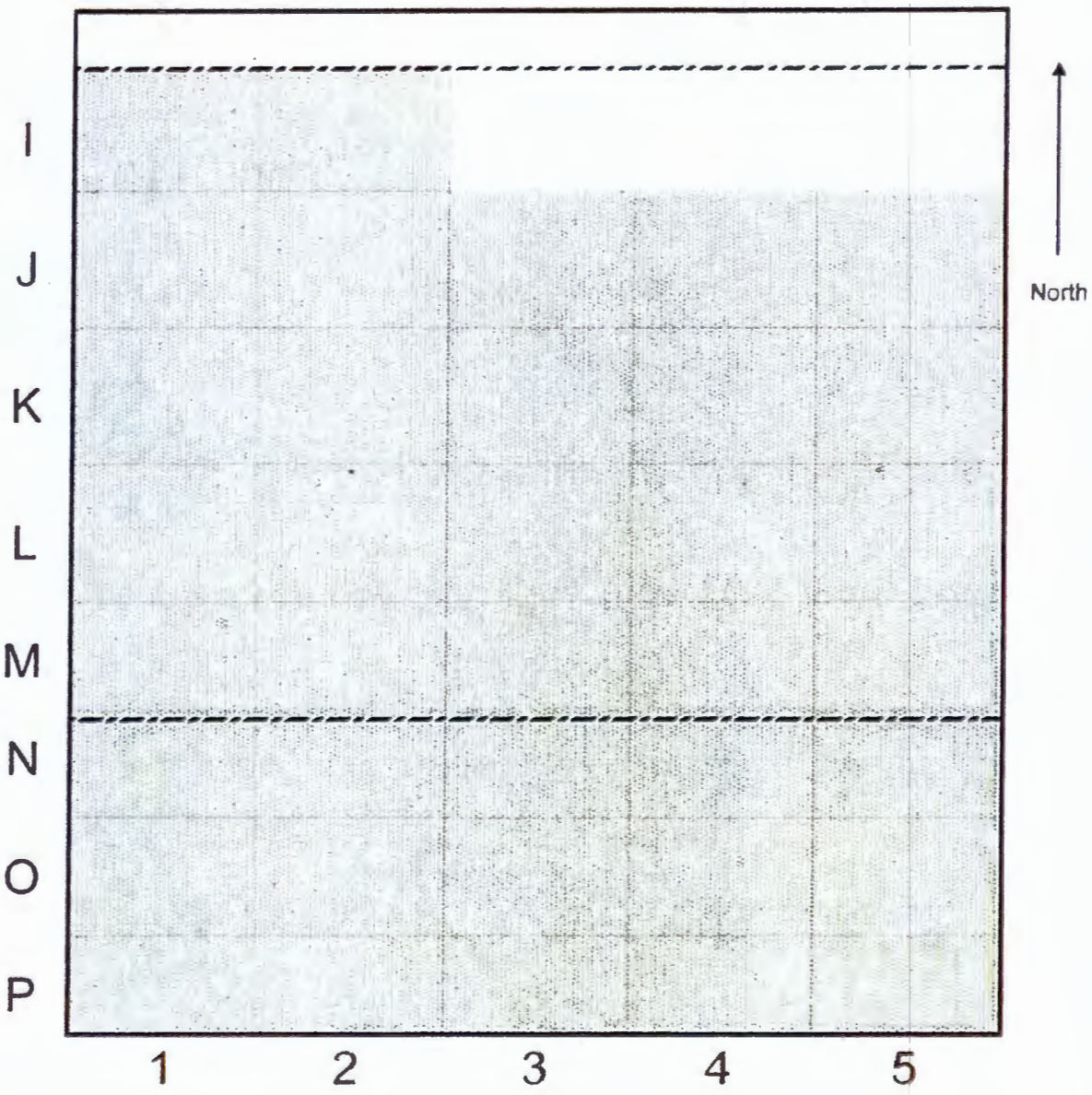
Date:	6/8/2010	Lift:	No. 2
Report:	05-016-084	Operator:	J. Schut
Map No:	2 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

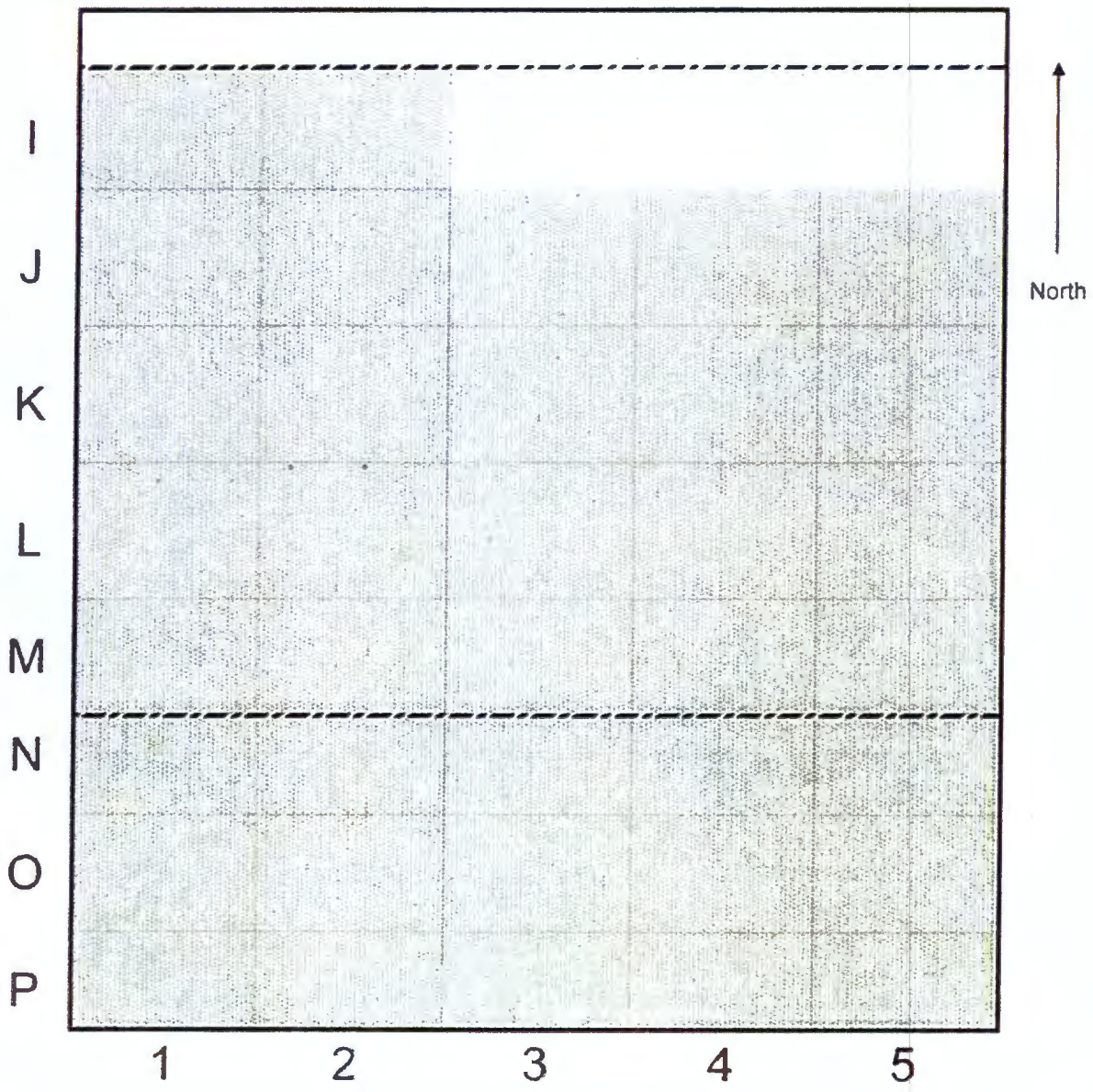
Date	6/7/2010	Lift.	No 3
Report	05-016-084	Operator.	J. Schut
Map No.	3 of 12	Material:	Admix
Grid	95-ft x 90-ft	Notes.	



S/C S013213A00

CQA Moisture Density Map Cell 9

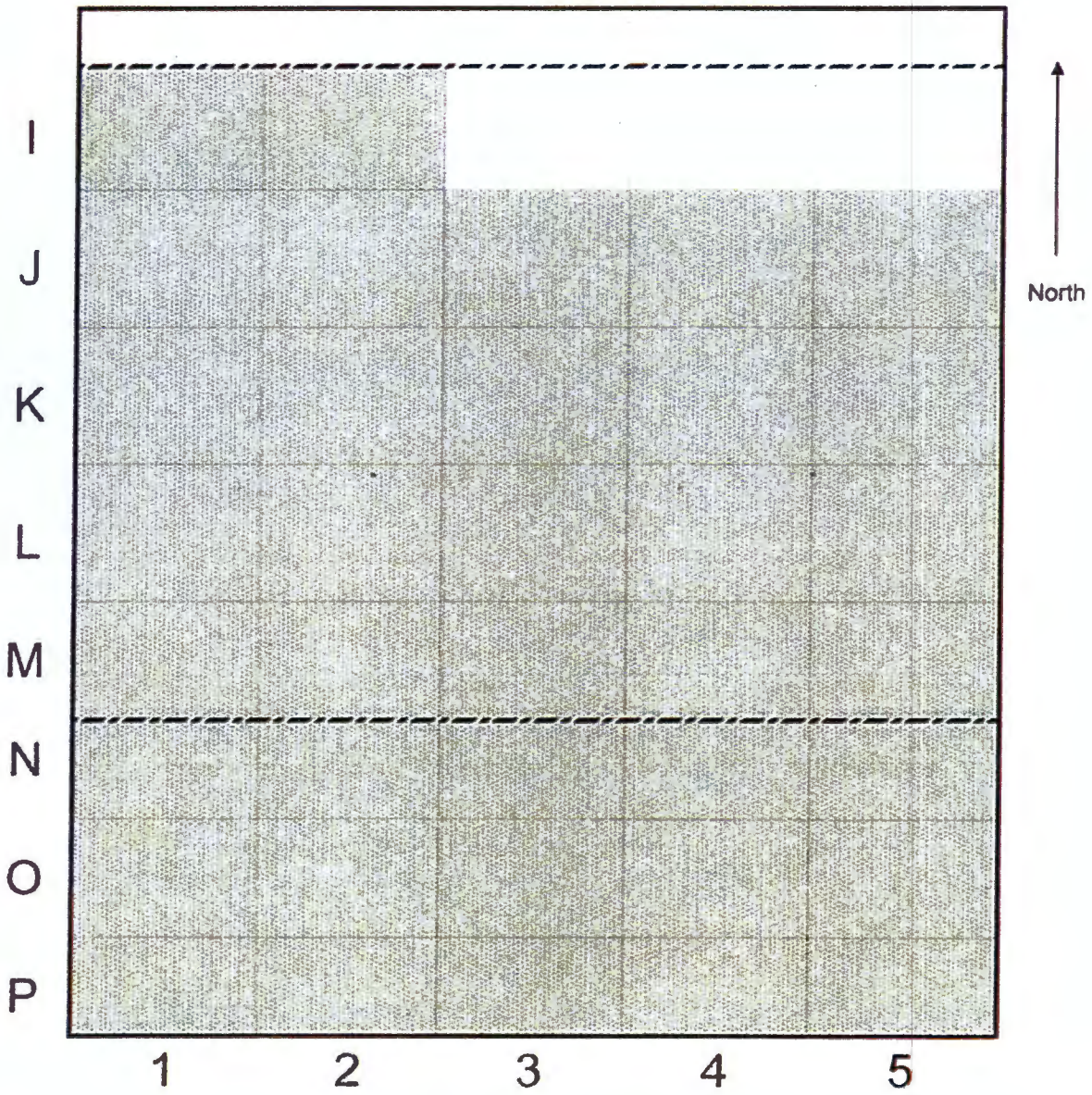
Date	6/7/2010	Lift	No 4
Report	05-016-084	Operator	J Schut
Map No:	4 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

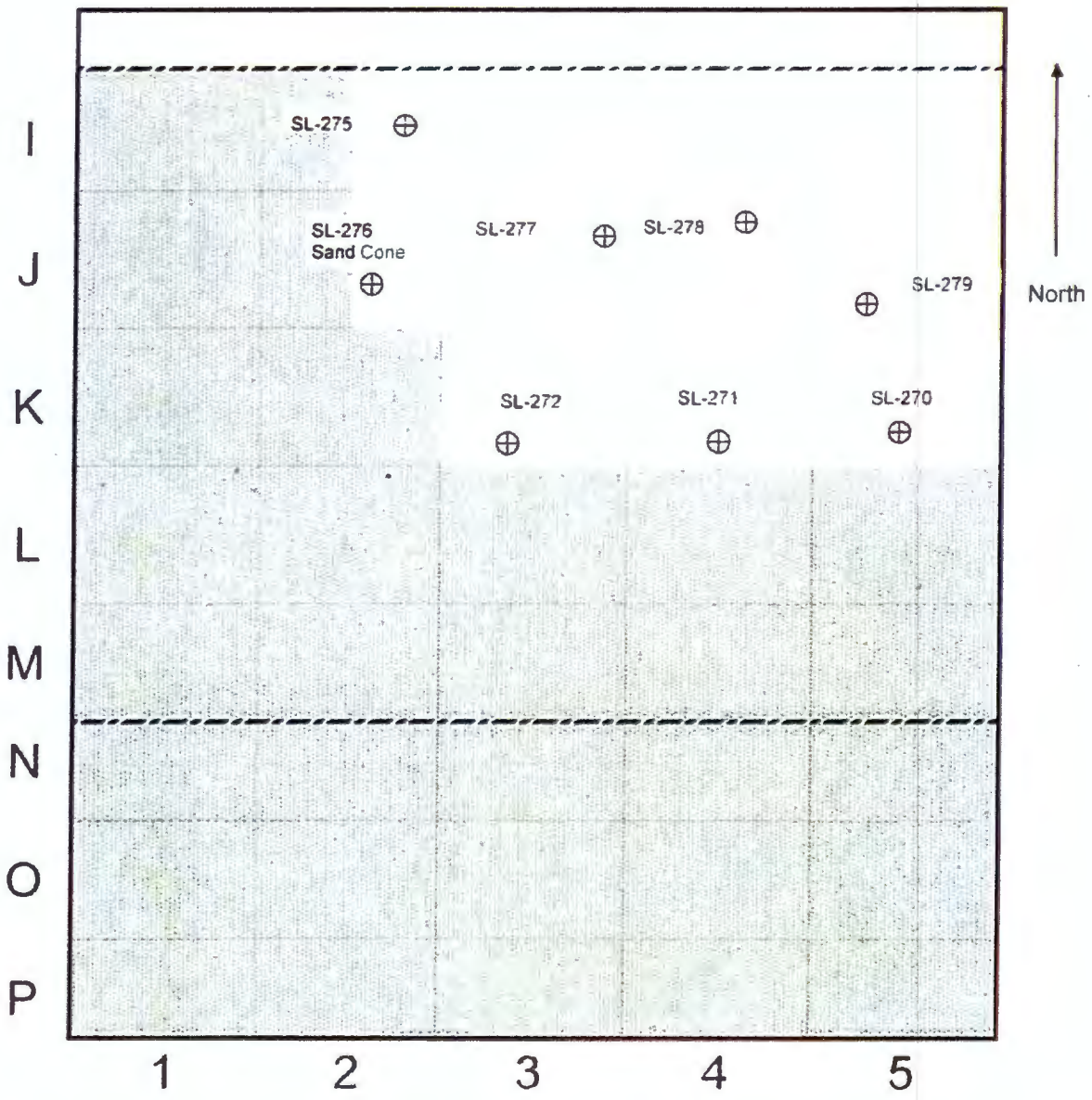
Date:	6/8/2010	Lift:	No. 5
Report:	05-016-084	Operator:	J. Schut
Map No:	5 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

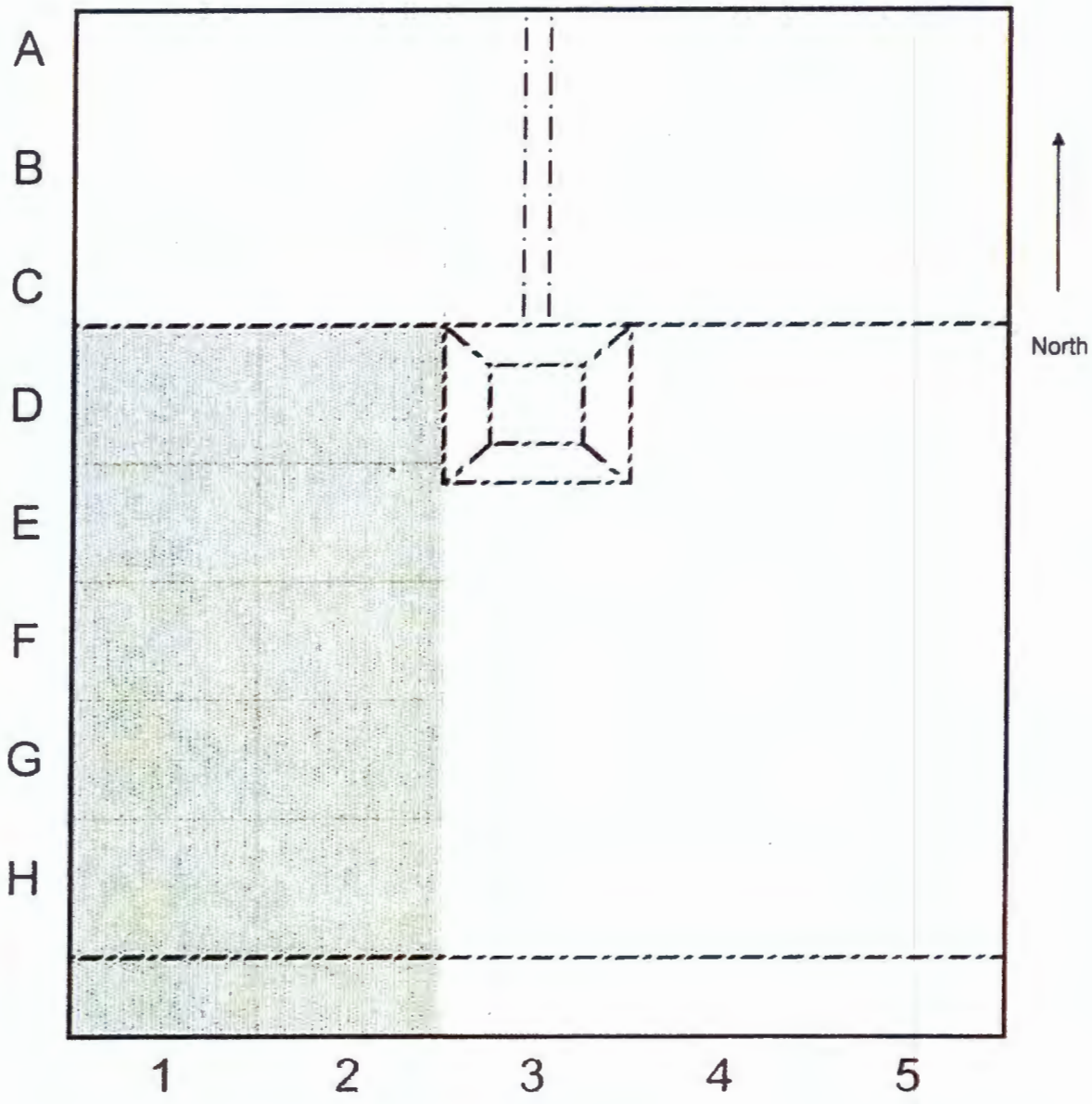
Date	6/8/2010	Lift	No 6
Report:	05-016-084	Operator.	J. Schut
Map No.	6 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

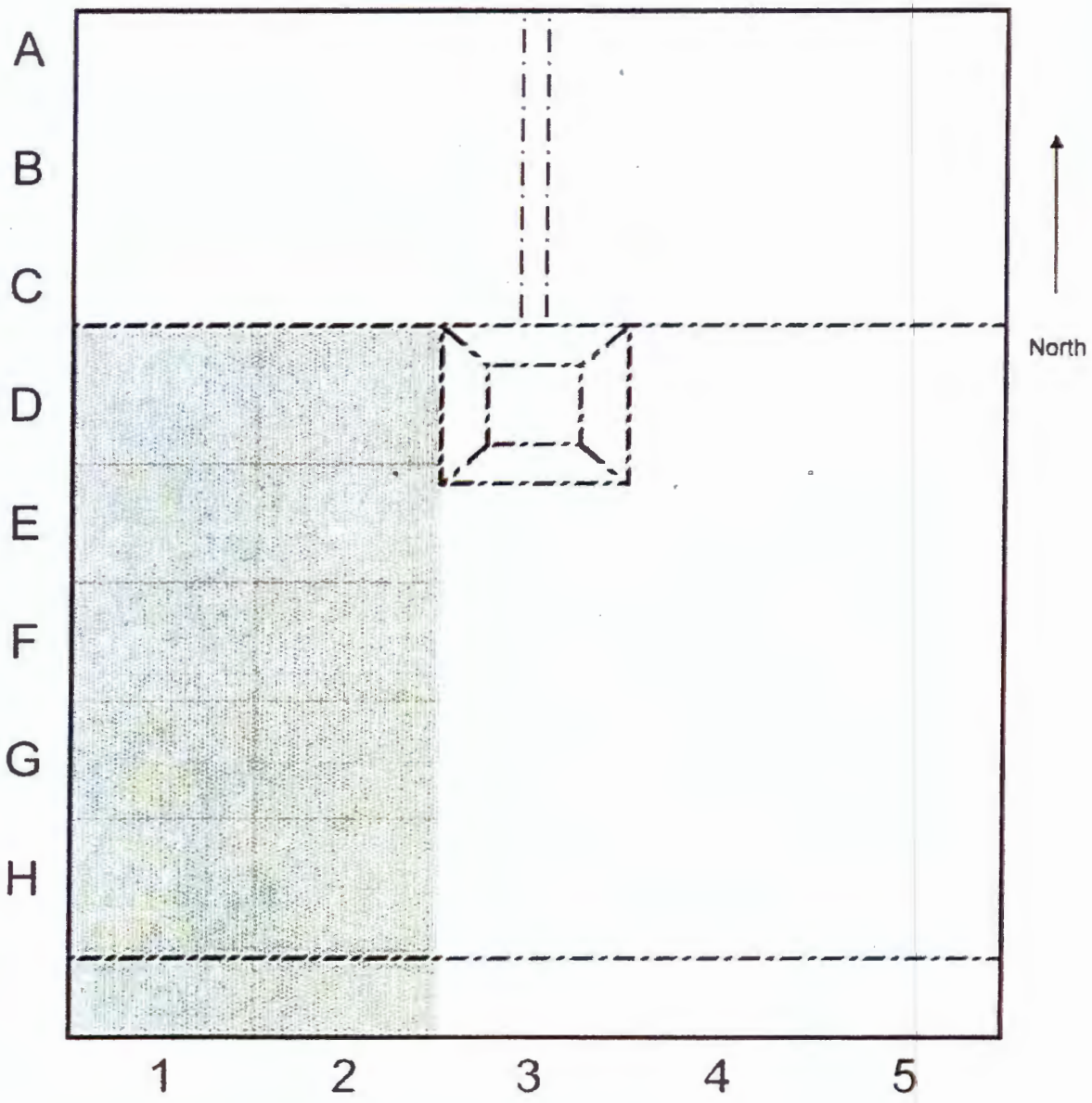
Date:	6/8/2010	Lift	No 1
Report:	05-016-084	Operator	J. Schut
Map No.	7 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

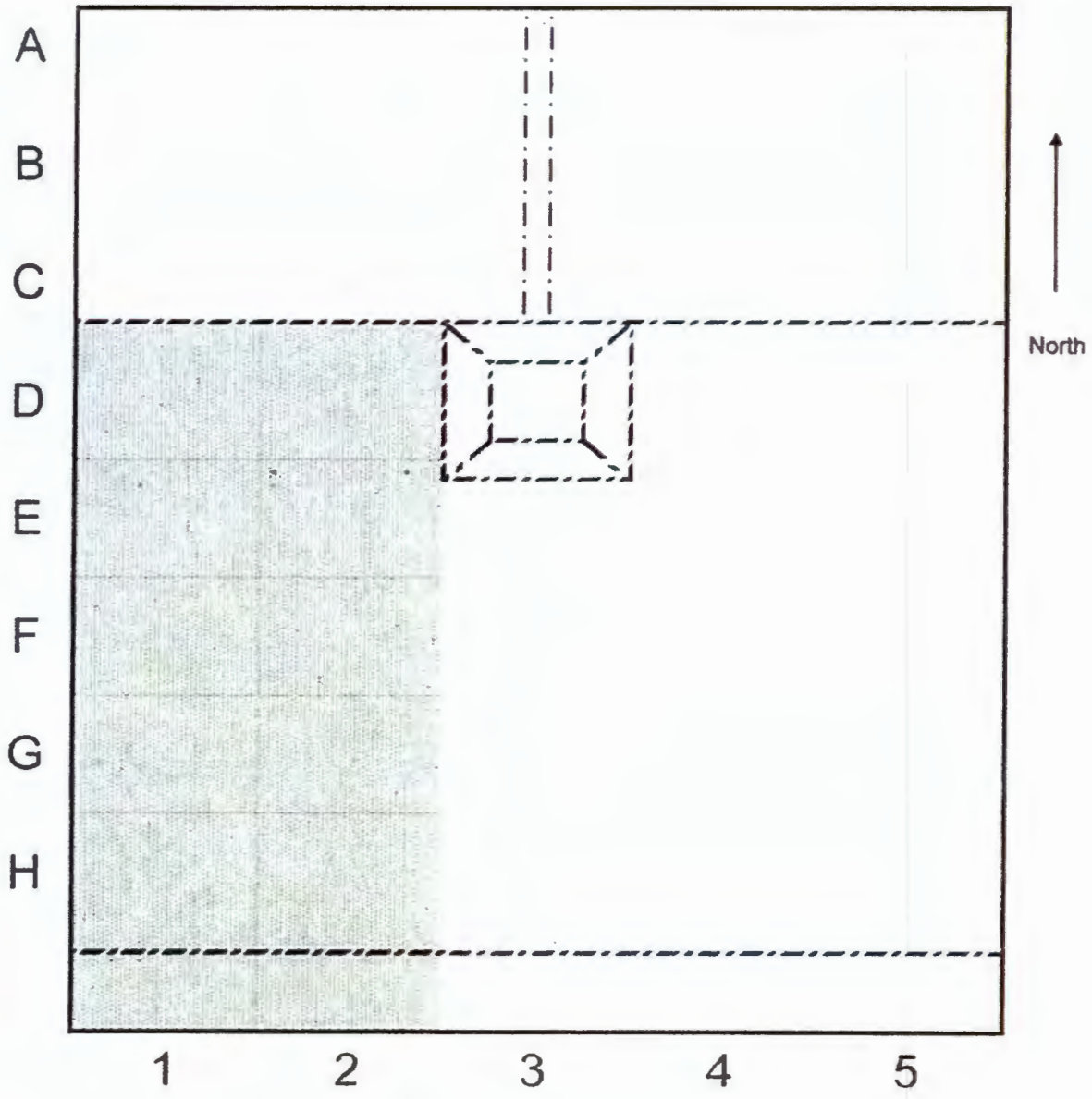
Date	6/8/2010	Lift:	No 2
Report.	05-016-084	Operator:	J. Schut
Map No.	8 of 12	Material.	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

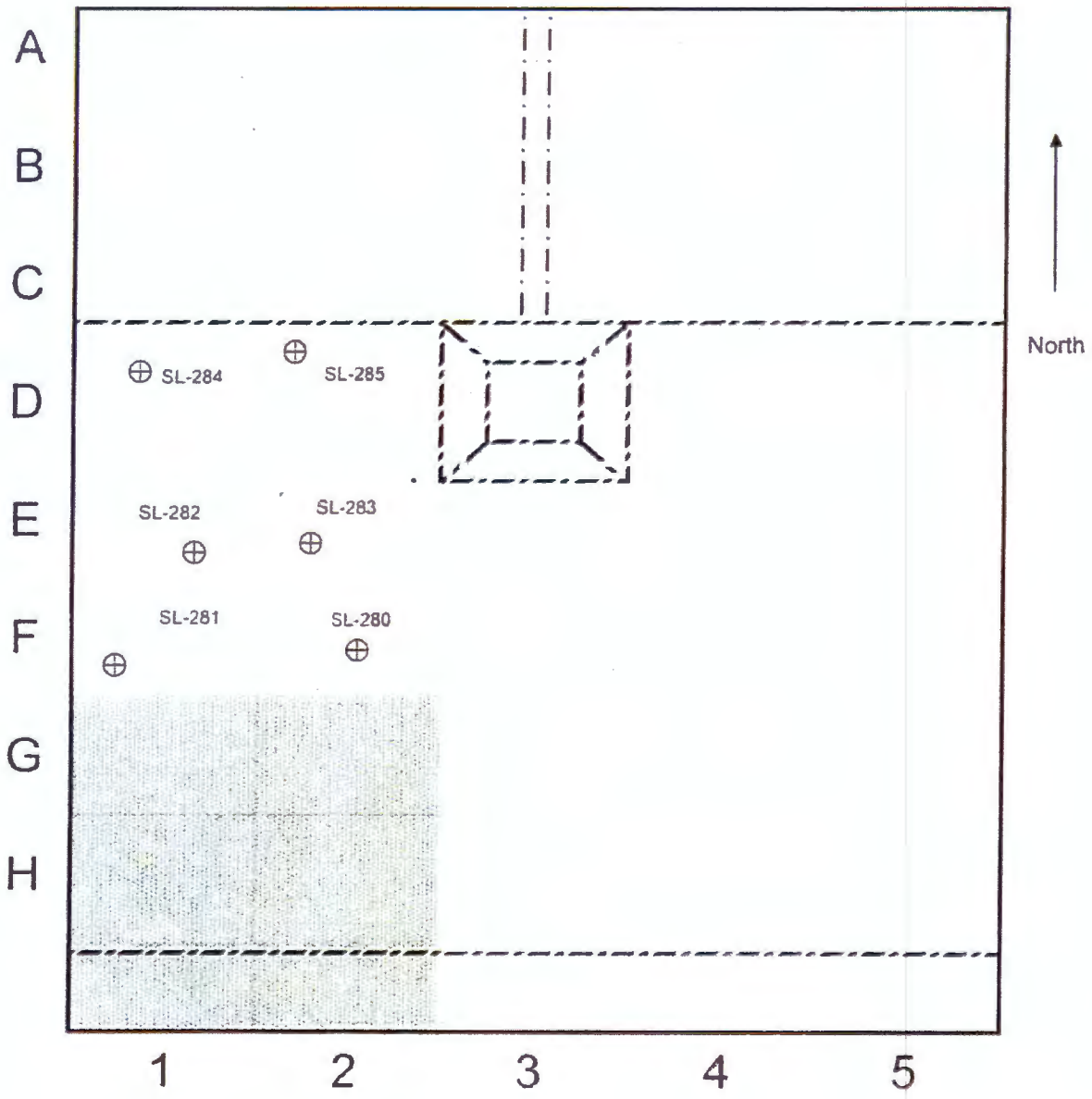
Date	6/8/2010	Lift	No 3
Report.	05-016-084	Operator.	J. Schut
Map No.	9 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

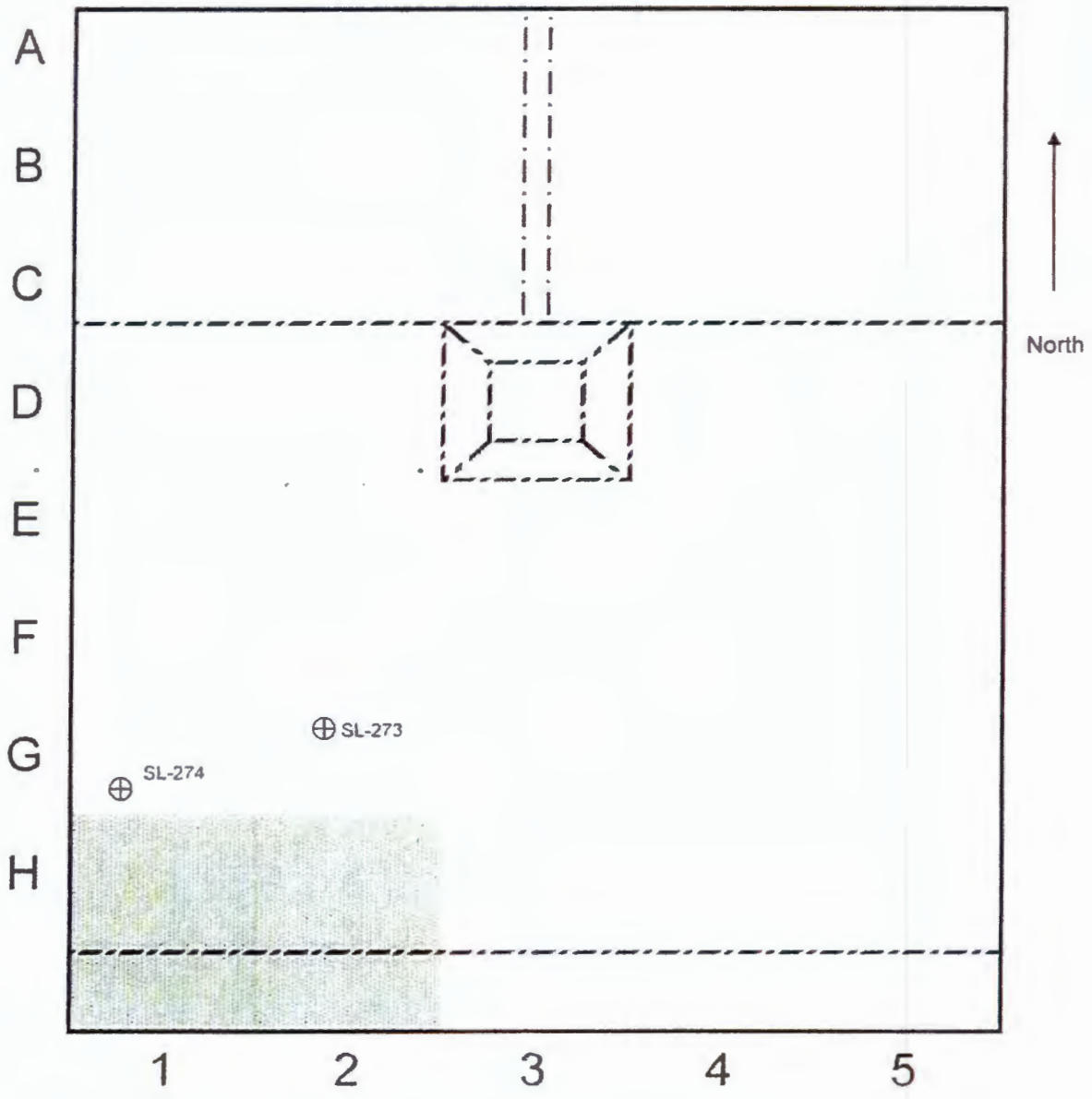
Date	6/8/2010	Lift	No 4
Report	05-016-084	Operator	J Schut
Map No	10 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

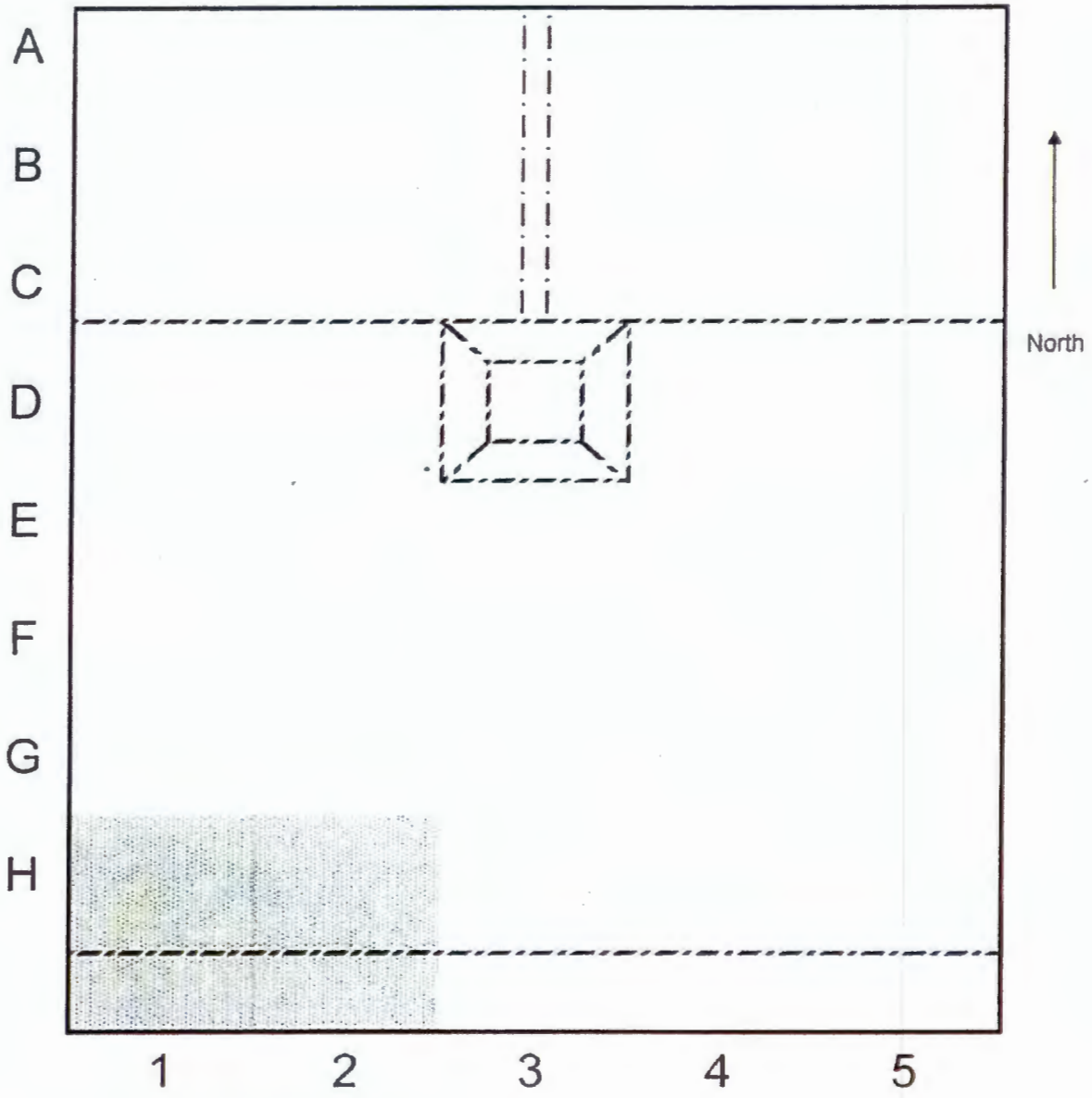
Date:	6/8/2010	Lift:	No 5
Report:	05-016-084	Operator:	J. Schut
Map No:	11 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/8/2010	Lift:	No. 6
Report:	05-016-084	Operator:	J. Schut
Map No:	12 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name:	Charlie Skiba			Sample ID:	SL-276
Project:	S013213A00			Sample Description:	Admix Soil
Project Location:	ERDF Cells 9-10			Sampling Date:	6/8/2010
Tested By:	J. Schult	Date:	6/8/2010	Sampled By:	J. Schult
Reviewed By:	J. Voss	Date:	6/9/2010	Date Received:	6/8/2010
Comments				Report No.:	05-016-083

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3956.10 g
2. Mass of Proctor mold + sand, W_2	5394.20 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.11 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6115.40 g
6. Mass of bottle + cone + sand (after use), W_4	4482.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6505.0 g
9. Mass of bottle + cone + sand (after use), W_8	3703.0 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{d\,(sand)}$	0.0271 ft^3
11. Mass of gallon can, W_5	372.30 g
12. Mass of gallon can + moist soil, W_7	2031.40 g
13. Mass of gallon can + dry soil, W_9	1795.80 g
14. Moist unit weight of soil in field, $= W_7 - W_5 / V_2$	134.96 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.6%
16. Dry unit weight in the field, $_{d\,(sand)} =$ [illegible] / (1+(w (%)/100)	115.79 lb/ft^3
17. Comparision moisture content =	15.8%
18. Dry unit weight comparison =	114.0 lb/ft^3

FIELD DENSITY TEST (ASTM D-6938)

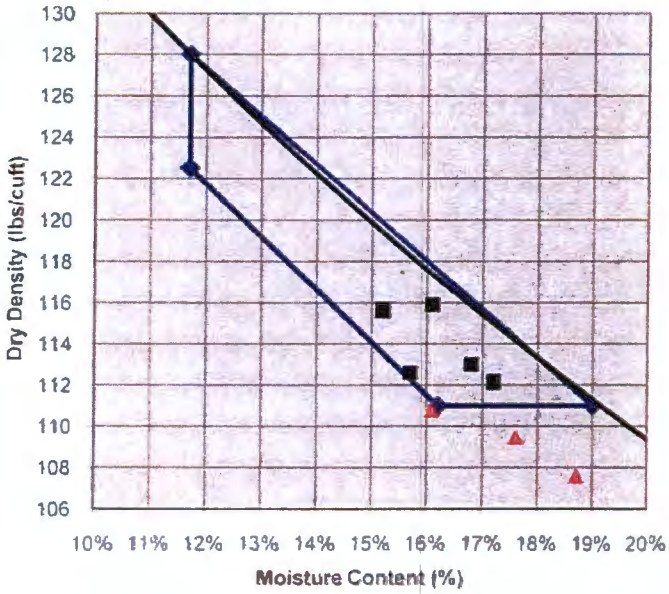
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/9/2010
Description: Admix Soil
Report: 05-016-085
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.

Model: 3430 Troxler ID: 27881
Moisture Std: 644 Density Std 2241
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-286	1	10:39	3	107.6	18.7%	0.567	N/A	89.0%	H3	Fail
SL-287	1	10:47	3	115.9	16.1%	0.455	N/A	96.0%	I3	Pass
SL-288	1	11:51	3	109.5	17.6%	0.539	N/A	88.0%	H4	Fail
SL-289	1	11:58	3	115.6	15.2%	0.458	N/A	90.0%	I4	Pass
SL-290	1	13:26	3	112.1	17.2%	0.503	N/A	92.0%	H5	Pass
SL-291	1	13:30	3	112.2	17.2%	0.503	18.2%	92.0%	I5	Pass
SL-292	5	15:15	3	110.8	16.1%	0.522	N/A	83.0%	F2	Fail
SL-293	5	15:22	3	112.6	15.7%	0.498	N/A	85.0%	F1	Pass
SL-294	5	15:26	3	115.7	15.2%	0.457	N/A	90.0%	E1	Pass
SL-295	5	15:31	3	113.0	16.8%	0.491	N/A	92.0%	E2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-286				
SL-287				
SL-288				
SL-289				
SL-290				
SL-291	SC	2036.1	1800.2	505.6
SL-292				
SL-293				
SL-294				
SL-295				



Envirotech Engineering & Consulting, Inc

6/15/10
Date

FIELD DENSITY TEST (ASTM D-6938)

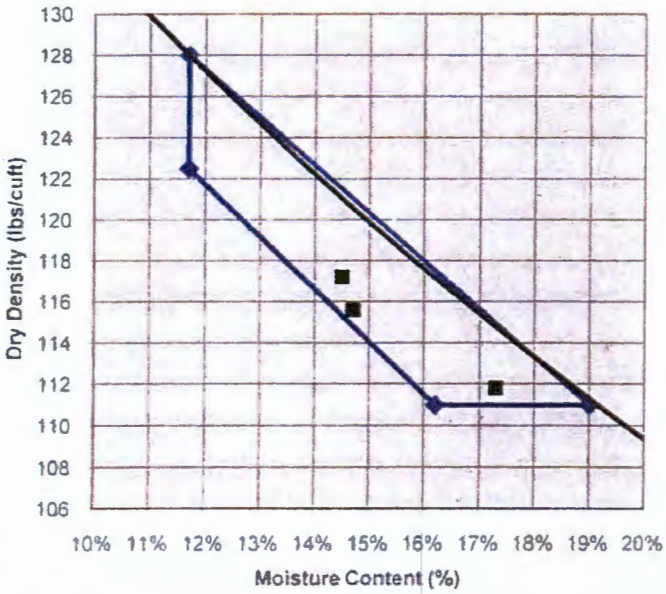
ENVIROTECH

Client: WCH
Submittal: 05-18J Admix Field Data
Project: S013213A00
Test Date: 6/9/2010
Description: Admix Soil
Report: 05-016-085
Comments: Unless otherwise stated - All test at taken at a depth of 6-in.
0

Model: 3430 Troxler ID: 27881
Moisture Std: 644 Density Stc 2241
Offsets: Moisture - Density -
Acceptable Zone

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-296	5	15:41	3	111.8	17.3%	0.507	N/A	92.0%	D1	Pass
SL-286A	1	15:51	6	115.6	14.7%	0.459	N/A	86.0%	H3	Pass
SL-288A	1	15:58	6	117.2	14.5%	0.438	N/A	89.0%	H4	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-296				
SL-286A				
SL-288A				



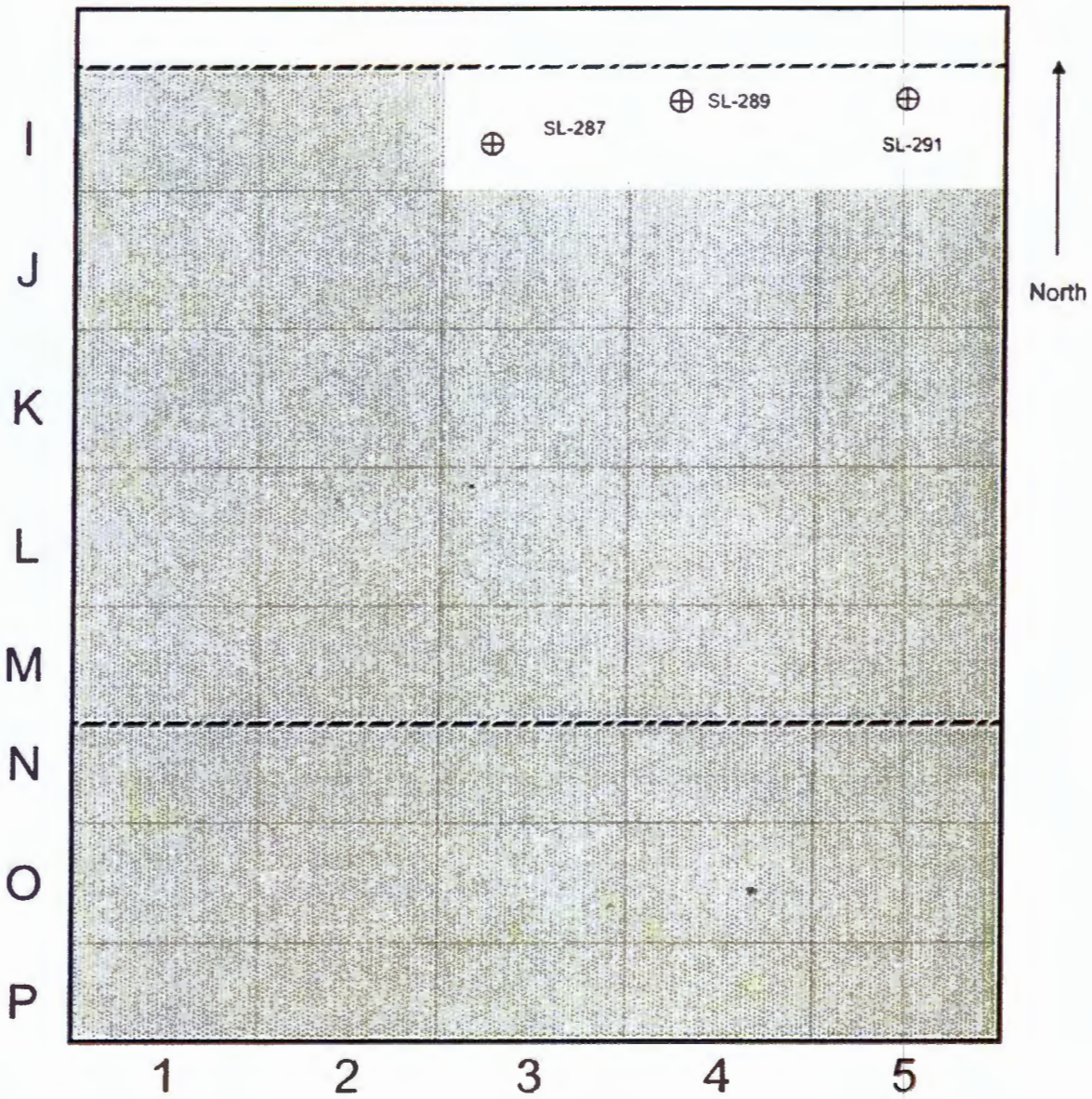
Envirotech Engineering & Consulting, Inc

6/14/10
Date

S/C S013213A00

CQA Moisture Density Map Cell 9

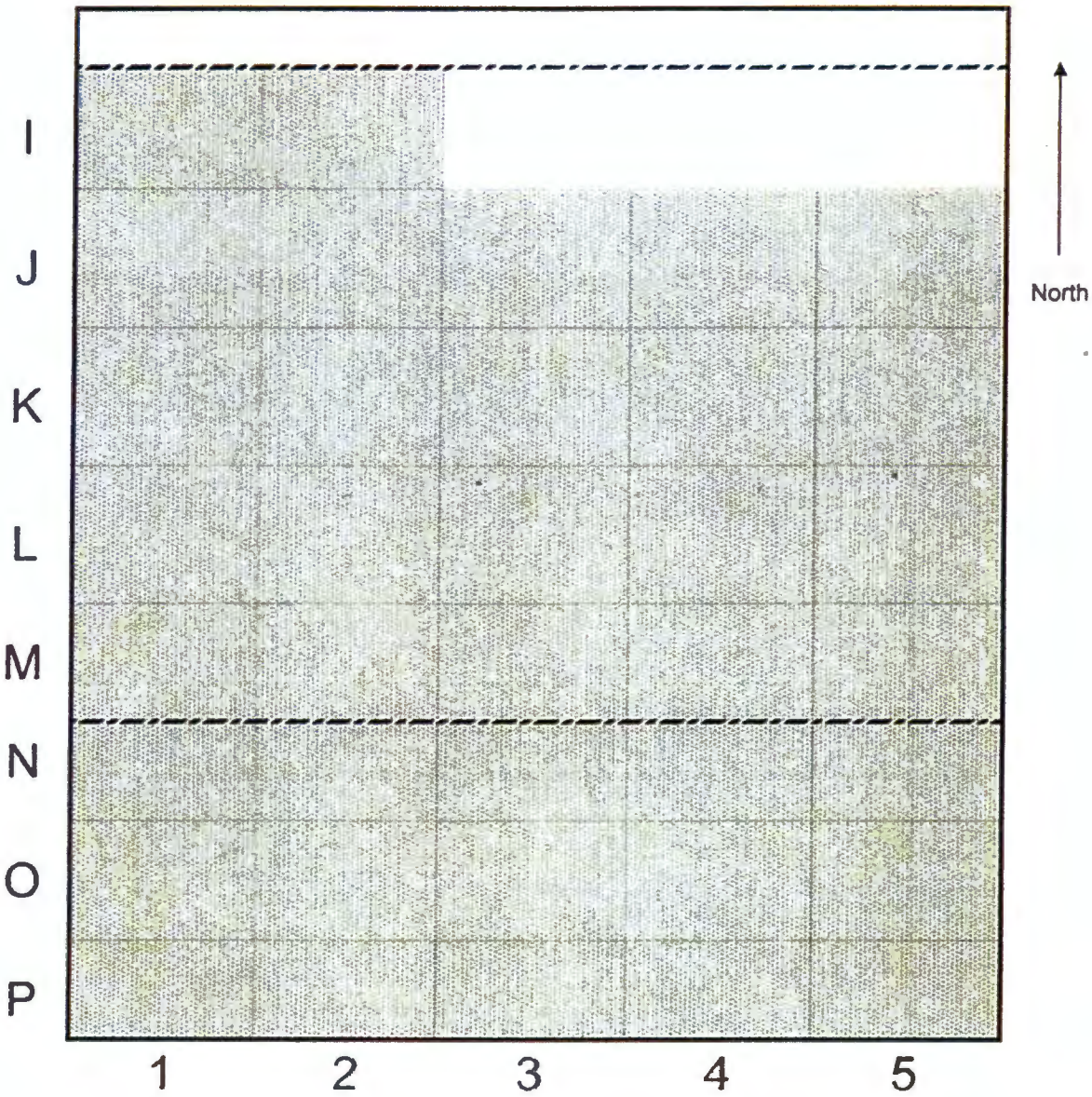
Date:	6/9/2010	Lift:	No. 1
Report:	05-016-085	Operator:	J. Schut
Map No:	1 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

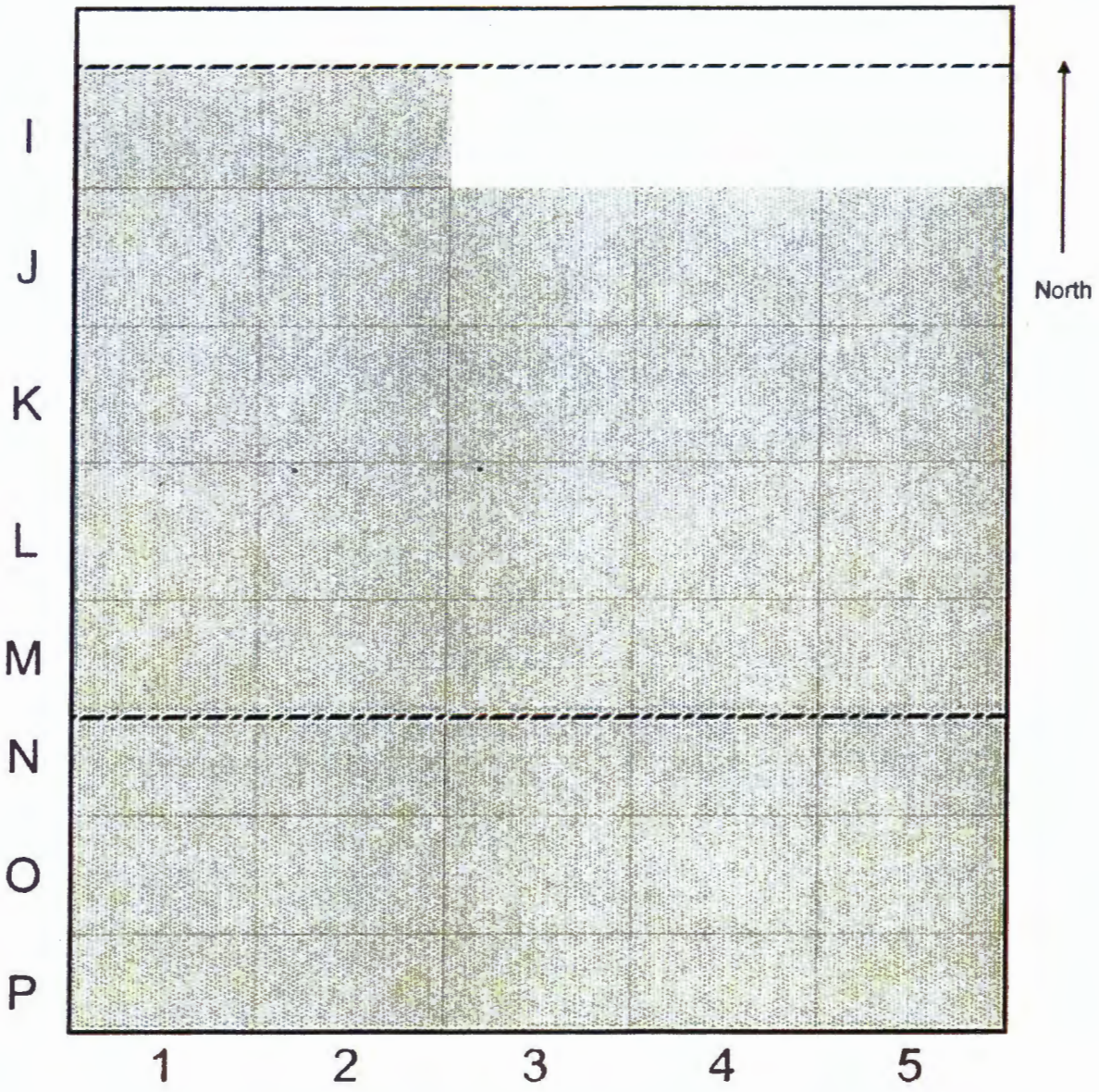
Date:	6/9/2010	Lift:	No 2
Report:	05-016-085	Operator:	J. Schut
Map No.	2 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C. S013213A00

CQA Moisture Density Map Cell 9

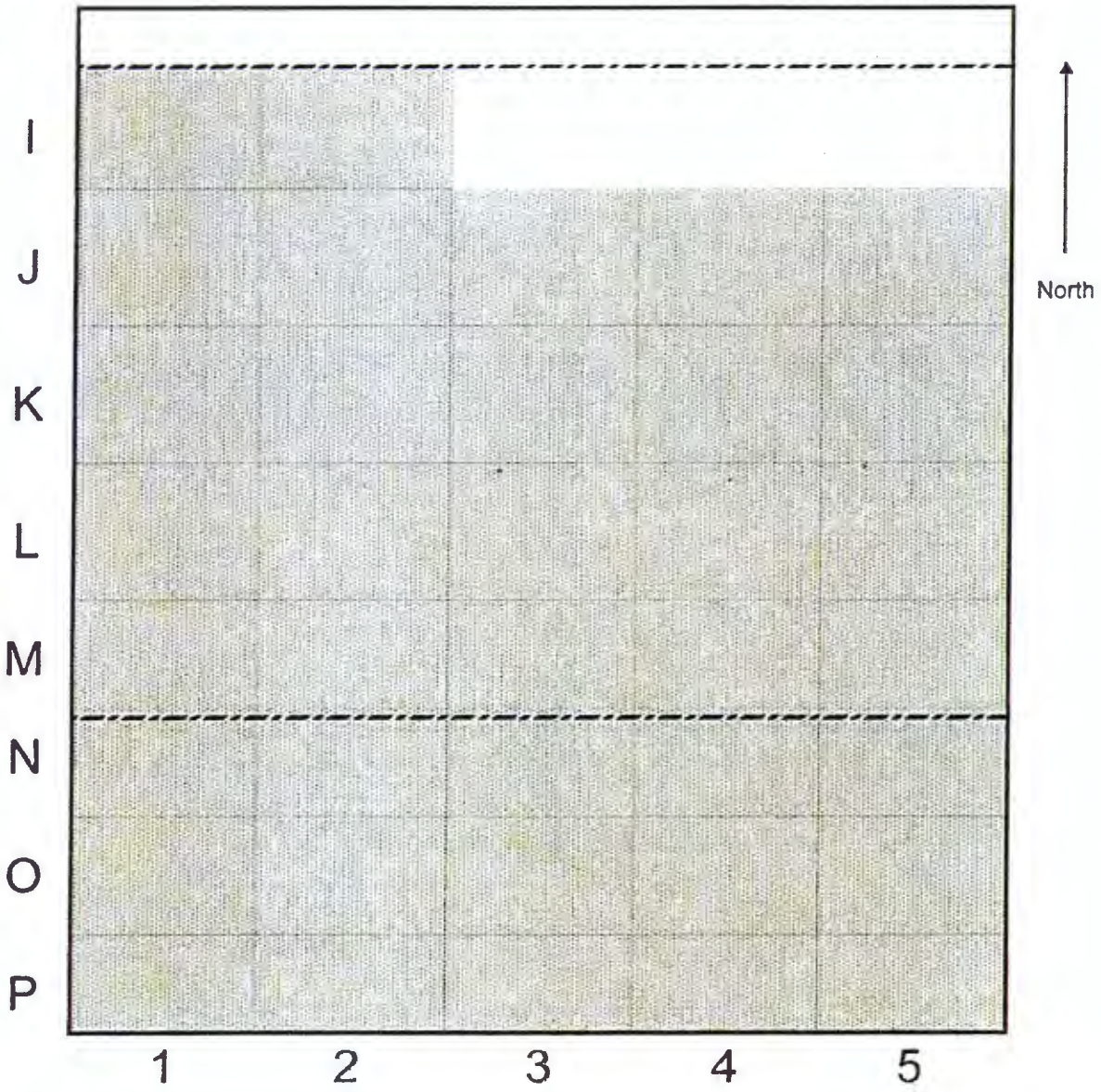
Date	6/9/2010	Lift:	No. 3
Report:	05-016-085	Operator:	J. Schut
Map No	3 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

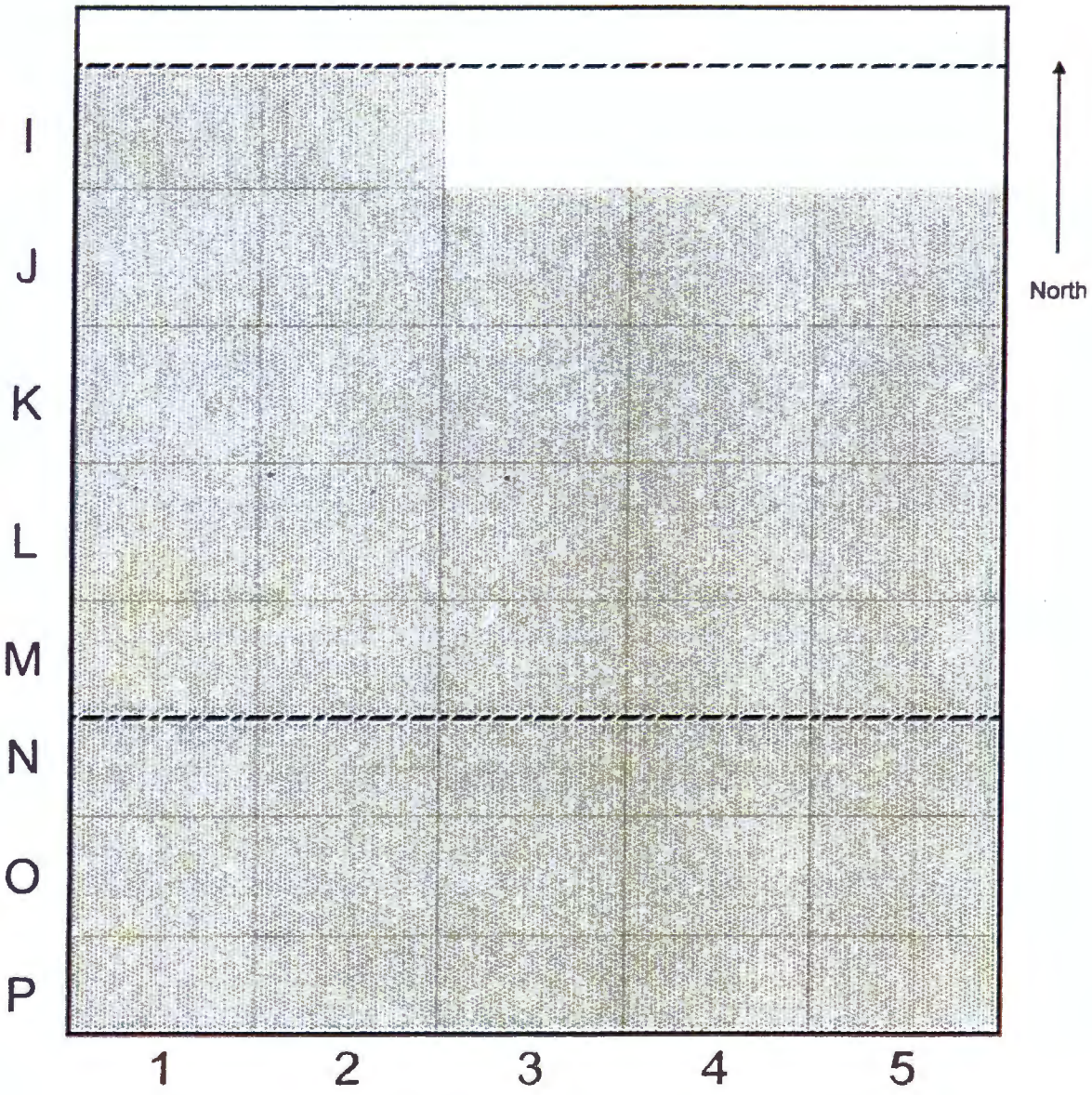
Date:	6/9/2010	Lift:	No. 4
Report:	05-016-085	Operator:	J. Schut
Map No:	4 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

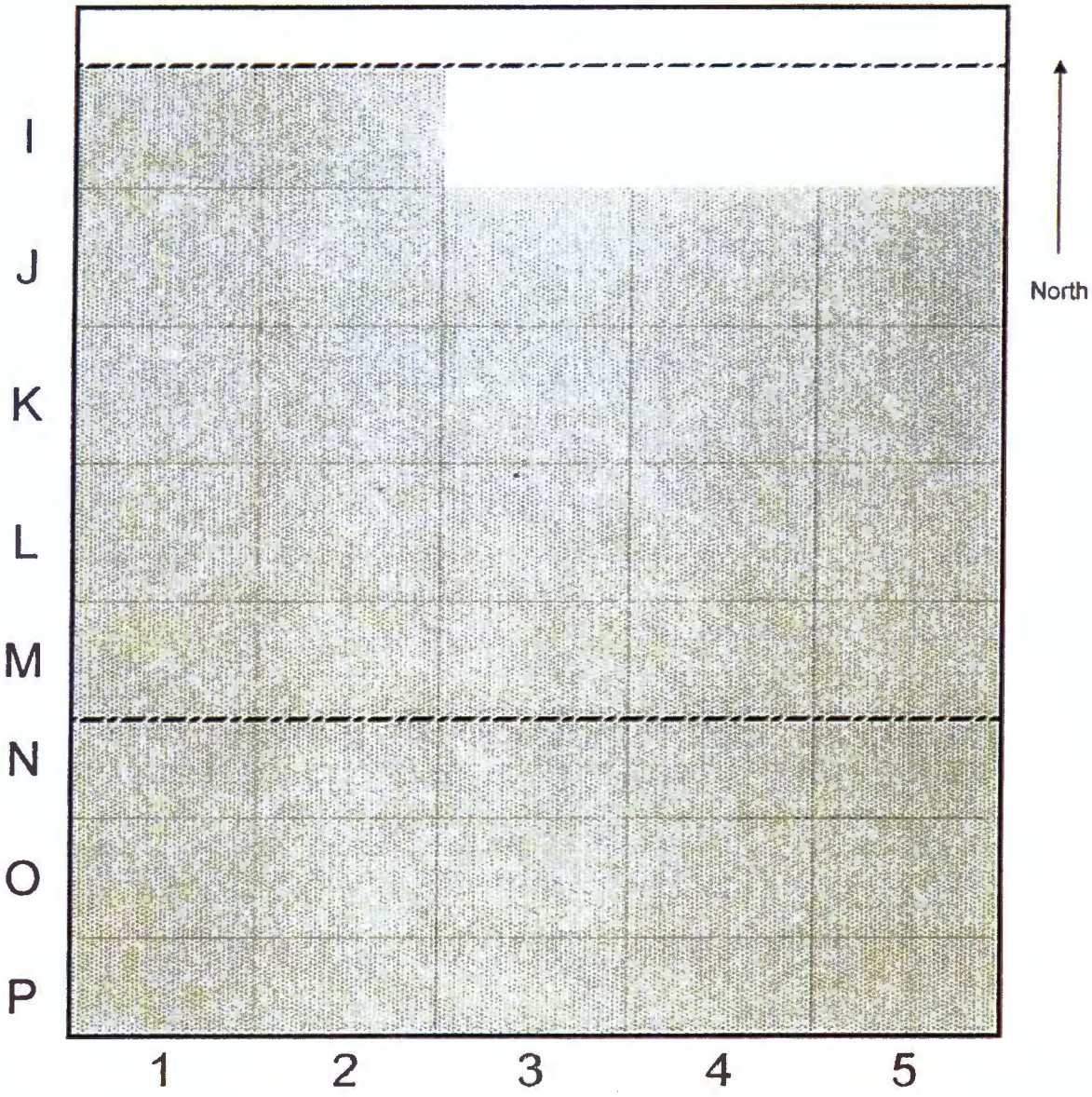
Date	6/9/2010	Lift:	No. 5
Report	05-016-085	Operator	J. Schut
Map No:	5 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes.	



S/C: S013213A00

CQA Moisture Density Map Cell 9

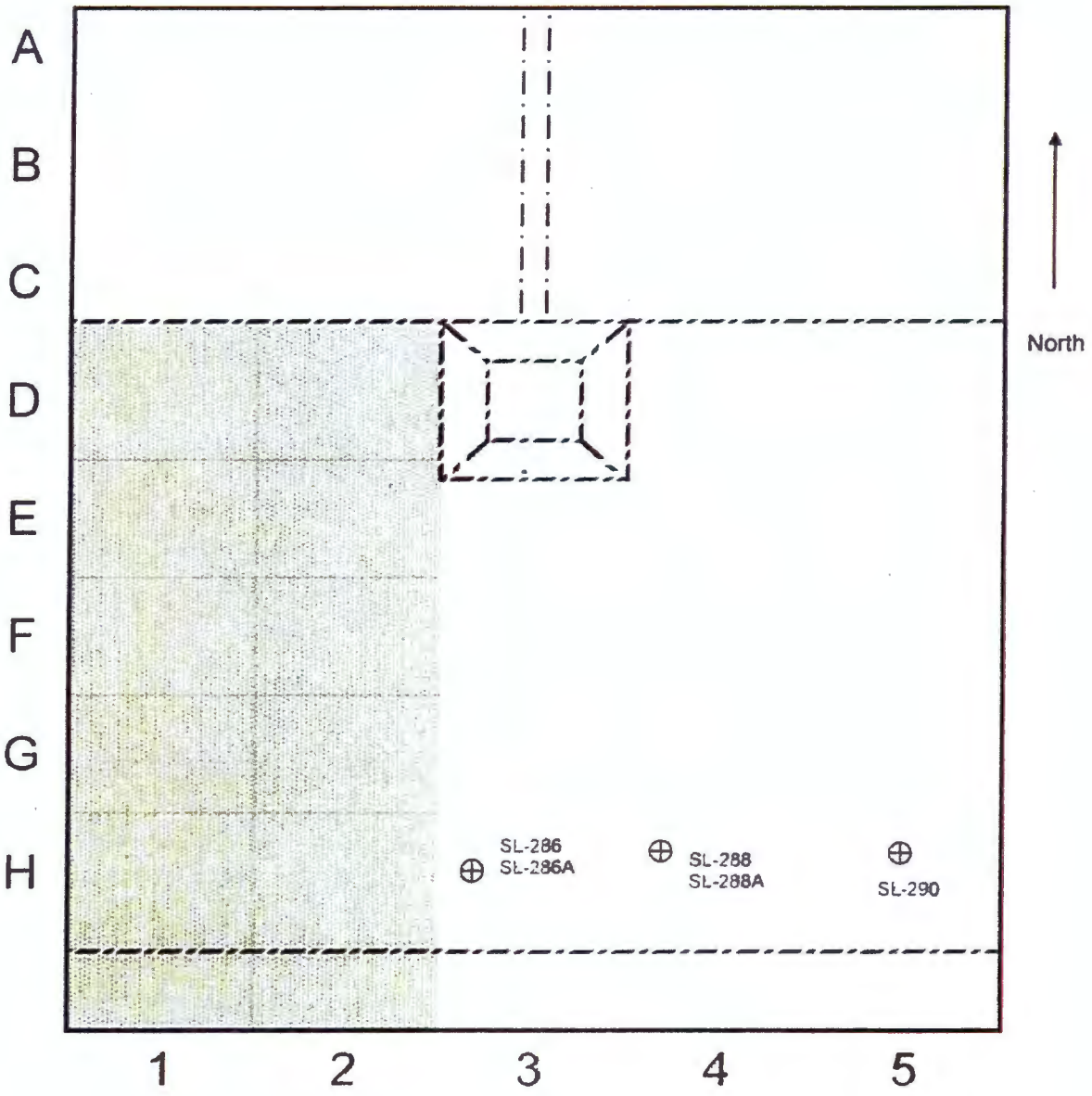
Date	6/9/2010	Lift:	No. 6
Report:	05-016-085	Operator:	J. Schut
Map No:	6 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

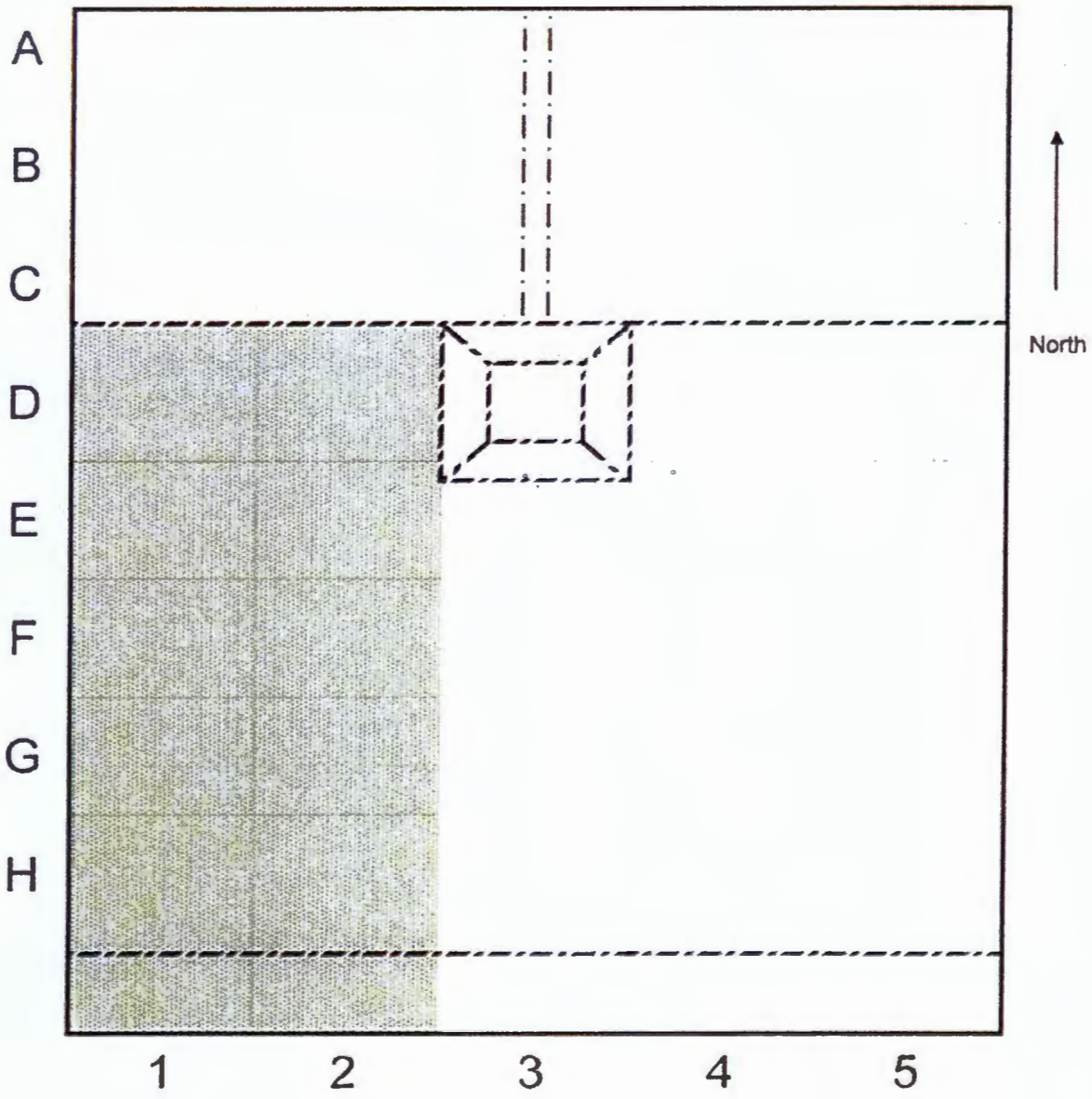
Date:	6/9/2010	Lift	No. 1
Report:	05-016-085	Operator:	J. Schut
Map No:	7 of 12	Material:	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

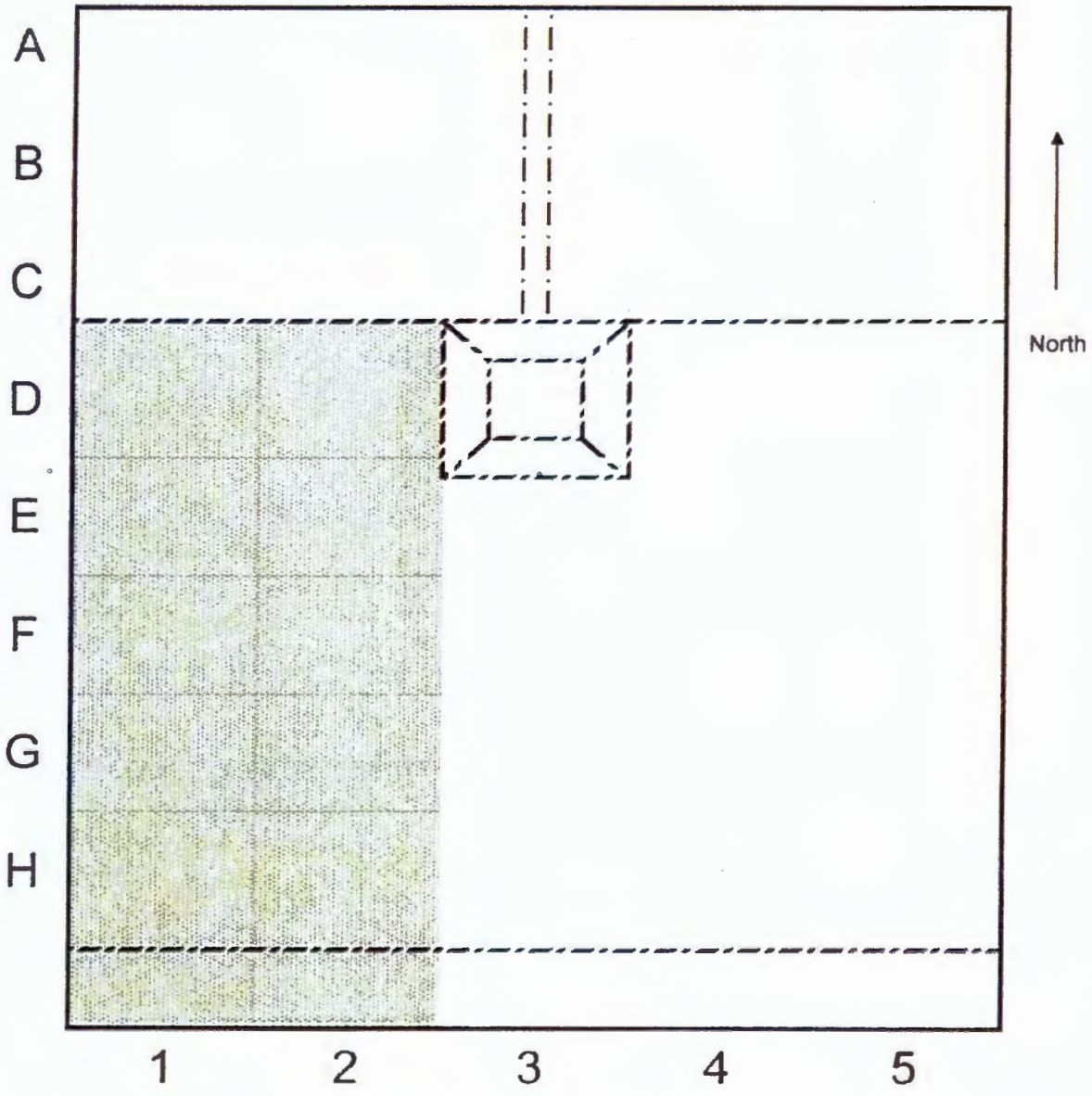
Date:	6/9/2010	Lift:	No. 2
Report:	05-016-085	Operator:	J. Schut
Map No:	8 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

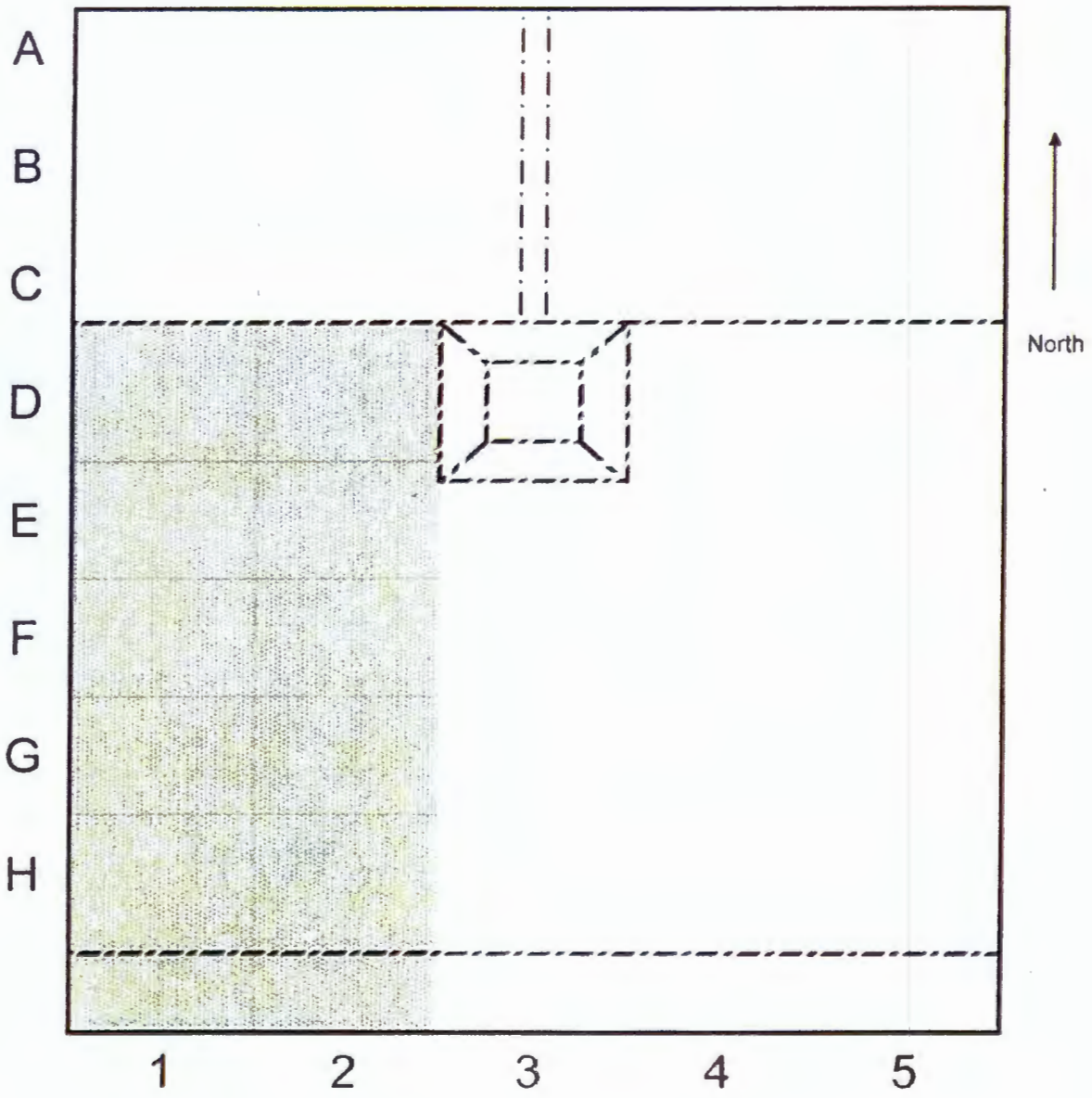
Date:	6/9/2010	Lift	No 3
Report:	05-016-085	Operator:	J Schut
Map No:	9 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

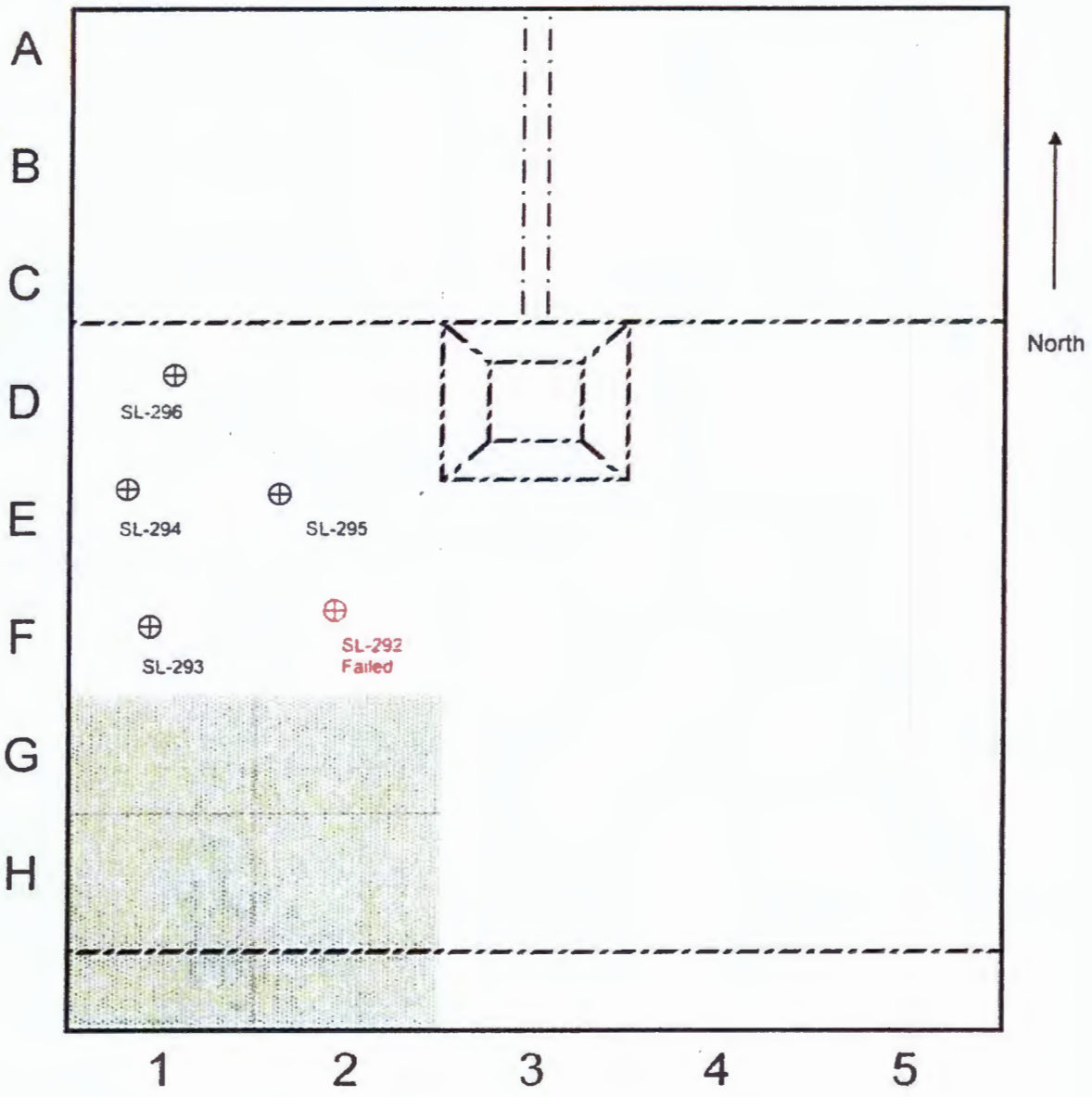
Date:	6/9/2010	Lift:	No. 4
Report:	05-016-085	Operator:	J. Schut
Map No:	10 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C. S013213A00

CQA Moisture Density Map Cell 9

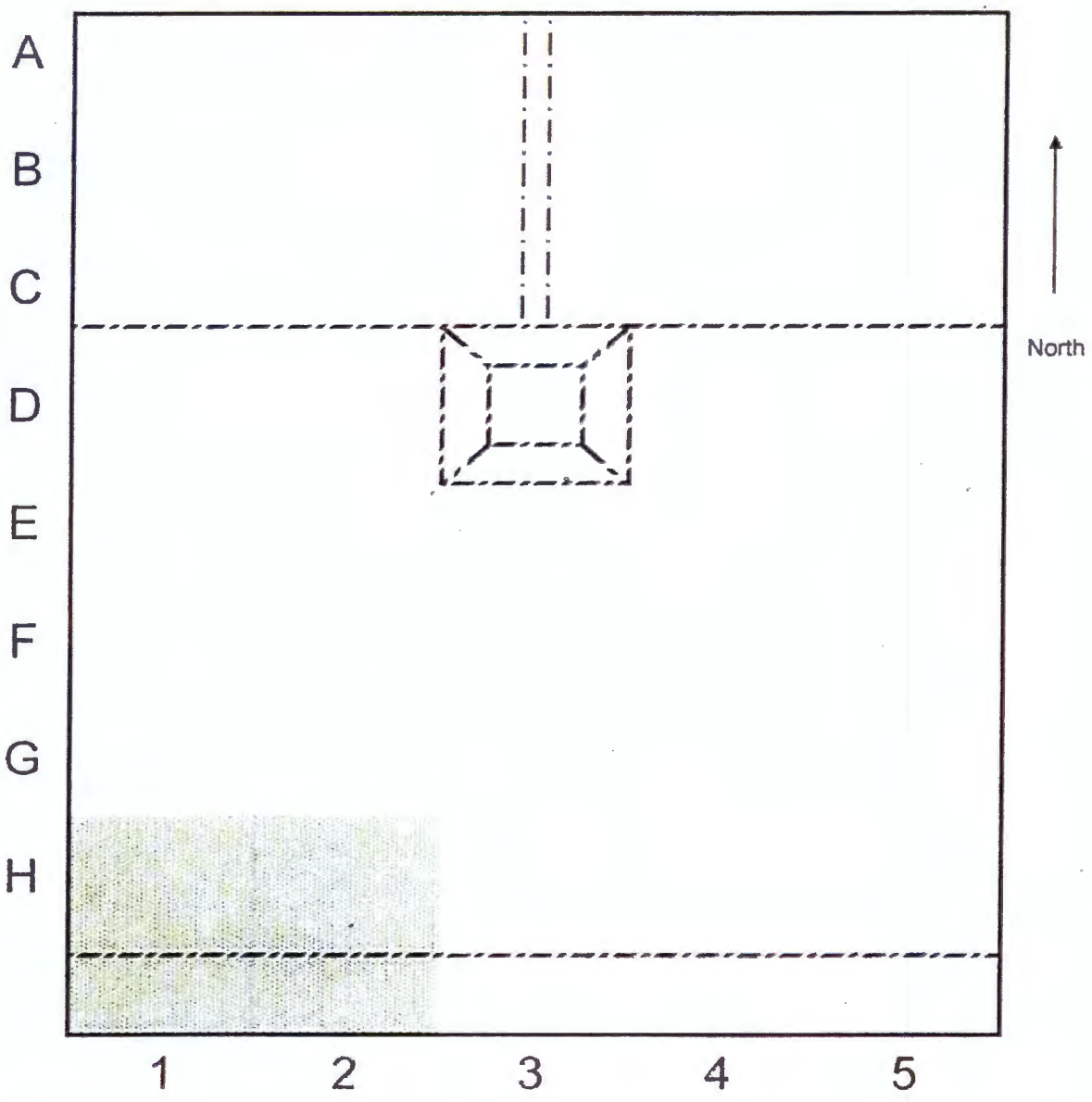
Date	6/9/2010	Lift	No. 5
Report.	05-016-085	Operator:	J. Schut
Map No:	11 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/9/2010	Lift:	No. 6
Report:	05-016-085	Operator:	J. Schut
Map No:	12 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH

2500 N. 11th Street | Enid, OK 73701
580 234-8780 | Fax (580) 237-4302

Client: WCH
Submittal: 05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID	SL-291
Project:	S013213A00			Sample Description:	Admix Soil
Project Location.	ERDF Cells 9-10			Sampling Date	6/9/2010
Tested By:	M. Lunday	Date:	6/9/2010	Sampled By	M. Lunday
Reviewed By.	J. Voss	Date:	6/10/2010	Date Received	6/9/2010
Comments				Report No.:	05-016-085

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3956.10 g
2. Mass of Proctor mold + sand, W_2	5394.20 g
3 Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.11 lb/ft^3

Calibration Cone

5 Mass of bottle + cone + sand (before use), W_3	6115.40 g
6 Mass of bottle + cone + sand (after use), W_4	4482.70 g
7 Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8 Mass of bottle + cone + sand (before use), W_6	6345.9 g
9. Mass of bottle + cone + sand (after use). W_8	3601.8 g
10 Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{d\,(sand)}$	0.0258 ft^3
11. Mass of gallon can, W_5	505.60 g
12. Mass of gallon can + moist soil, W_7	2036.10 g
13. Mass of gallon can + dry soil, W_9	1800.20 g
14. Moist unit weight of soil in field, = $W_7 - W_5 / V_2$	130.98 lb/ft^3
15 Moisture content in the field. w (%) = $\frac{W_7 - W_9}{W_9 - W_5}$ X 100	18.2%
16. Dry unit weight in the field, $_{d\,(sand)}$ = / (1+(w (%)/100)	110.79 lb/ft^3
17. Comparision moisture content =	17.2%
18. Dry unit weight comparison =	112.2 lb/ft^3

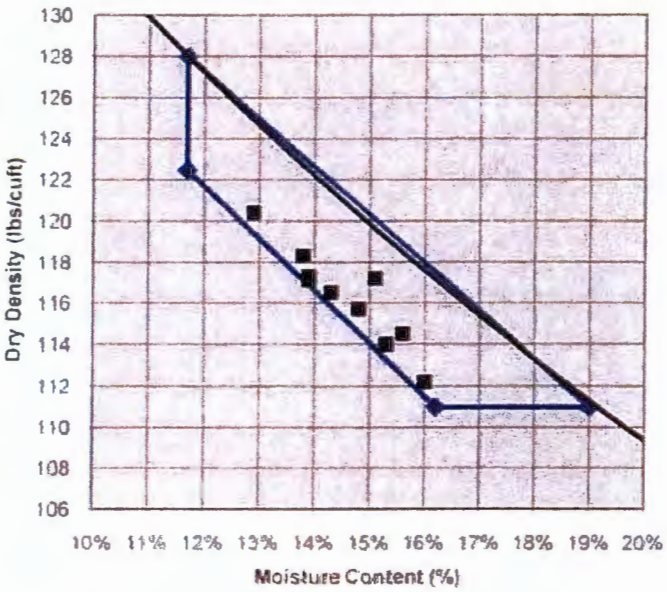
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client.	WCH				
Submittal	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID	27881
Test Date.	6/10/2010	Moisture Std.	644	Density Stc	2233
Description.	Admix Soil	Offsets	Moisture -	Density -	
Report	05-016-086	Acceptable Zone			
Comments.	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-292A	5	7:03	6	117.2	15.1%	0.438	N/A	93.0%	F2	Pass
SL-297	5	7.11	3	117.1	13.9%	0.439	N/A	85.0%	D2	Pass
SL-298	2	9:22	3	112.2	16.0%	0.503	N/A	86 0%	H3	Pass
SL-299	2	9:26	3	114.0	15.3%	0.479	N/A	86.0%	H4	Pass
SL-300	2	9:30	3	115.7	14.8%	0.457	N/A	87.0%	H5	Pass
SL-301	2	9.33	3	120.4	12.9%	0.400	N/A	87.0%	I3	Pass
SL-302	2	9:36	3	116.5	14.3%	0.447	N/A	86.0%	I4	Pass
SL-303	2	9:40	3	117.3	13.9%	0.437	N/A	86.0%	I5	Pass
SL-304	6	10:46	3	114.5	15.6%	0.473	N/A	89.0%	G1	Pass
SL-305	6	12:40	3	118.3	13.8%	0.425	N/A	88.0%	G2	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-292A				
SL-297	Shelby Tube			
SL-298				
SL-299				
SL-300				
SL-301				
SL-302				
SL-303				
SL-304				
SL-305				



Envirotech Engineering & Consulting, Inc

6/15/10
Date

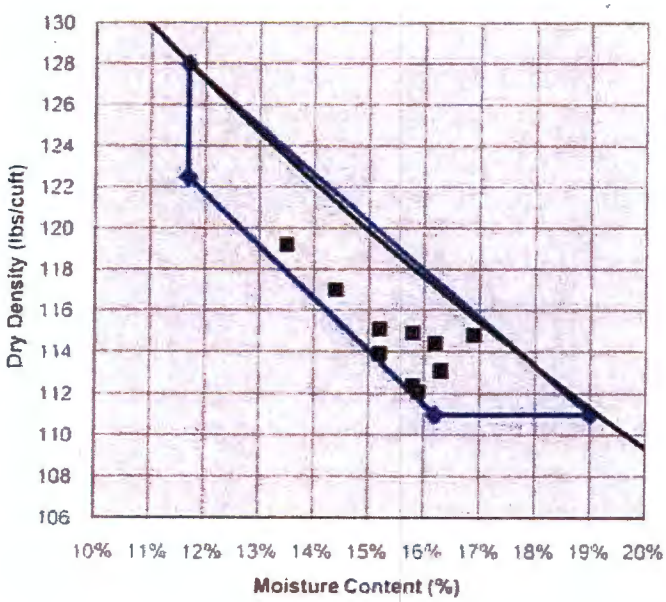
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/10/2010	Moisture Std	644	Density Std	2233
Description	Admix Soil	Offsets.	Moisture -	Density -	
Report	05-016-086	Acceptable Zone			
Comments.	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-306	6	10:50	3	115.1	15.2%	0.465	N/A	88.0%	F1	Pass
SL-307	6	12.45	3	114.4	16.2%	0.473	N/A	92.0%	F2	Pass
SL-308	6	12:50	3	112.1	15.9%	0.504	N/A	85.0%	E2	Pass
SL-309	6	10:56	3	113.9	15.2%	0.480	16.8%	86.0%	E1	Pass
SL-310	6	11:03	3	114.9	15.8%	0.466	N/A	92.0%	D1	Pass
SL-311	6	13:02	3	112.4	15.8%	0.500	N/A	85.0%	D2	Pass
SL-320	3	14:22	3	113.1	16.3%	0.490	N/A	90.0%	H3	Pass
SL-321	3	14:26	3	119.2	13.5%	0.414	N/A	88.0%	I3	Pass
SL-322	3	14:43	3	117.0	14.4%	0.440	N/A	88.0%	H4	Pass
SL-323	3	14:47	3	114.8	16.9%	0.468	N/A	98.0%	I4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-306				
SL-307				
SL-308				
SL-309	SC	2597.30	2276.8	372
SL-310				
SL-311				
SL-320				
SL-321				
SL-322				
SL-323				



Envirotech Engineering & Consulting, Inc

6/15/10
Date

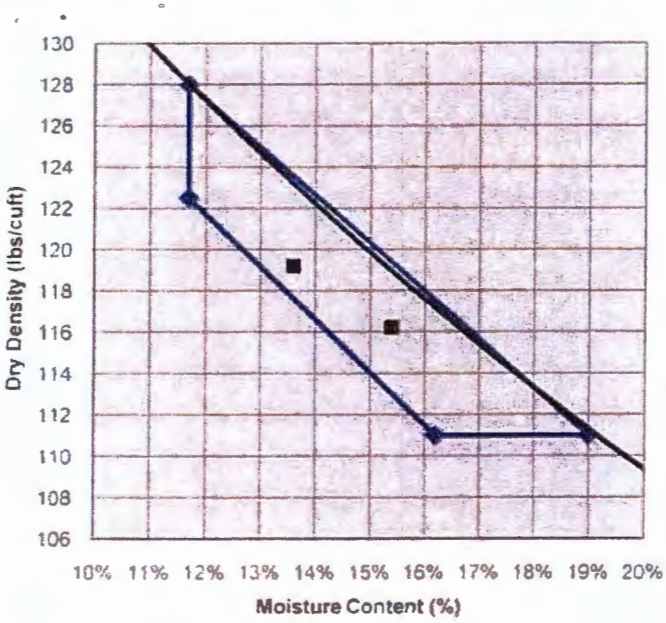
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID:	27881
Test Date	6/10/2010	Moisture Std.	644	Density Stc	2233
Description	Admix Soil	Offsets	Moisture -	Density	-
Report	05-016-086	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-324	3	14:52	3	119.2	13.6%	0.424	N/A	87.0%	H5	Pass
SL-325	3	14:55	3	116.2	15.4%	0.450	N/A	92.0%	I5	Pass
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-324				
SL-325				



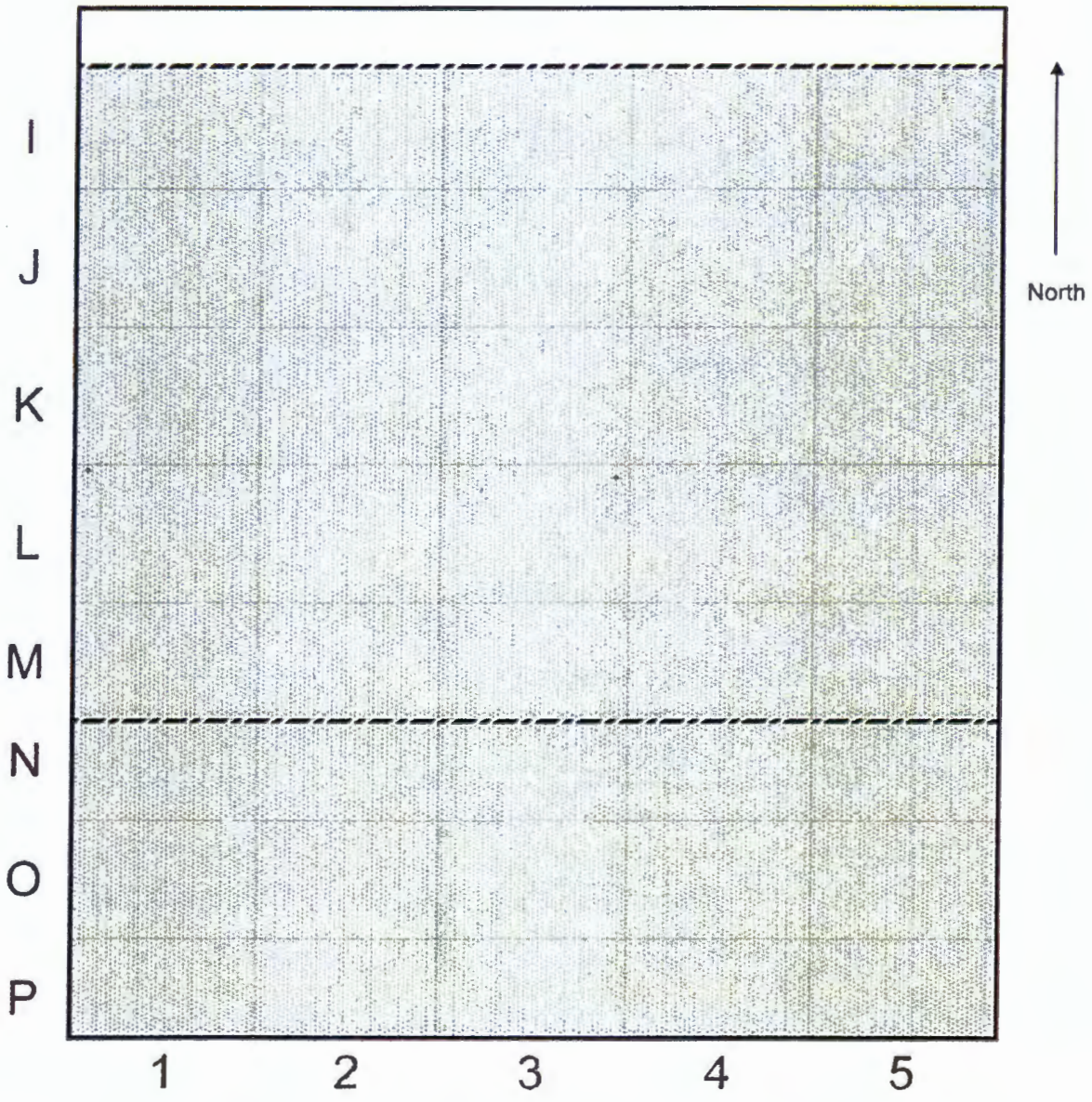
Envirotech Engineering & Consulting, Inc

6/15/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

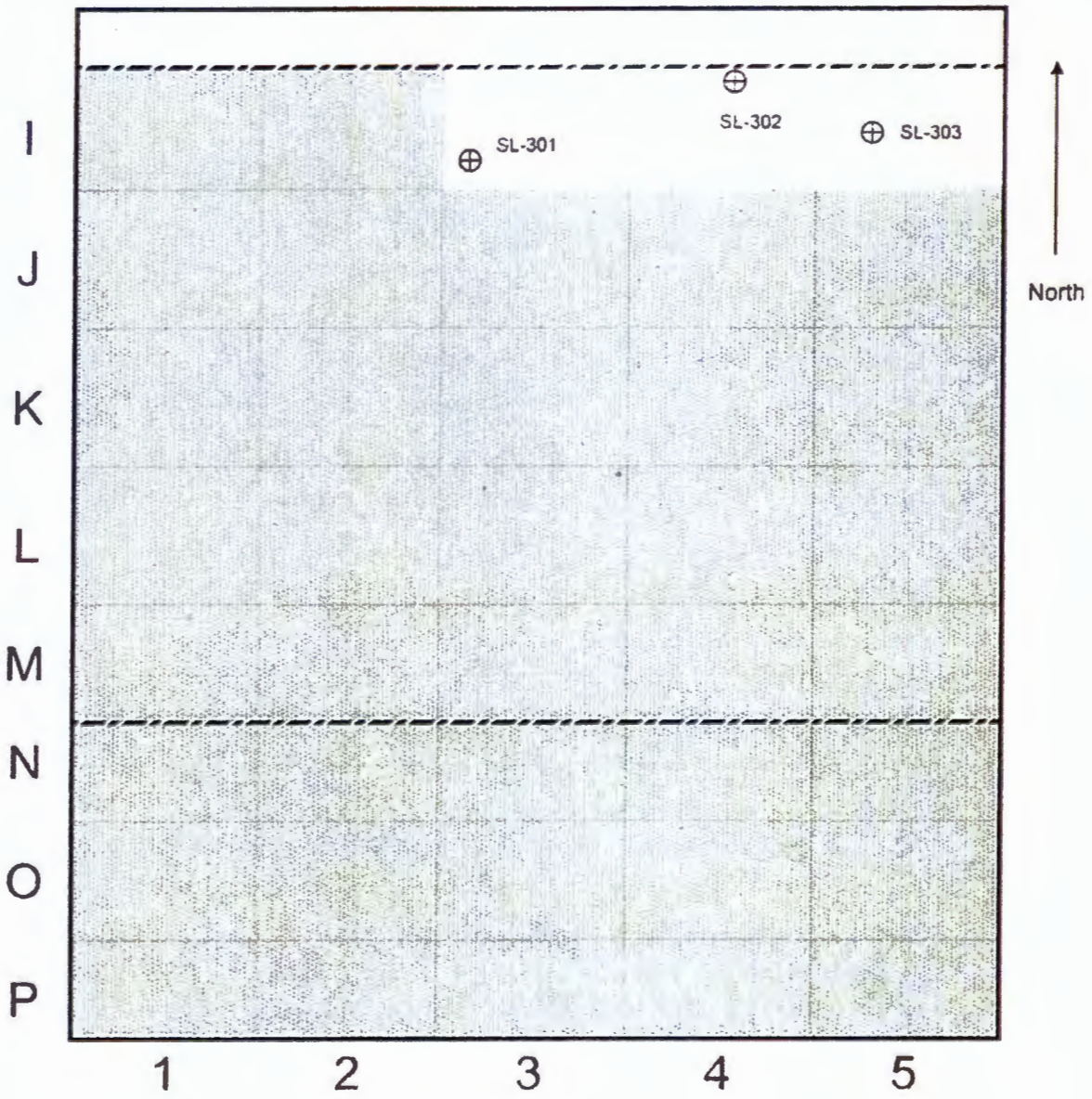
Date:	6/10/2010	Lift:	No 1
Report:	05-016-086	Operator:	R.M Lunday
Map No:	1 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

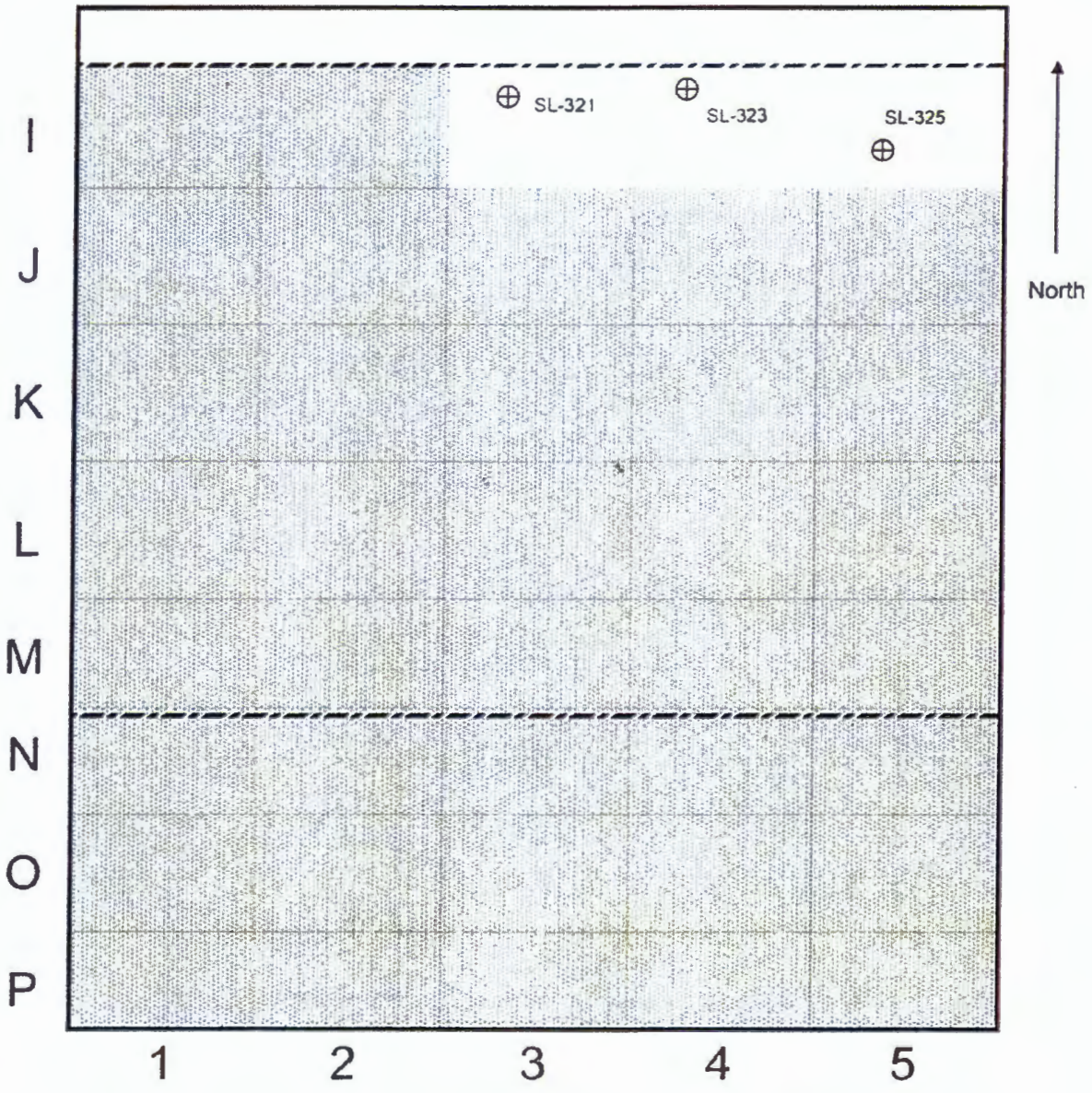
Date	6/10/2010	Lift.	No. 2
Report:	05-016-086	Operator	R.M. Lunday
Map No.	2 of 12	Material.	Admix
Grid	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

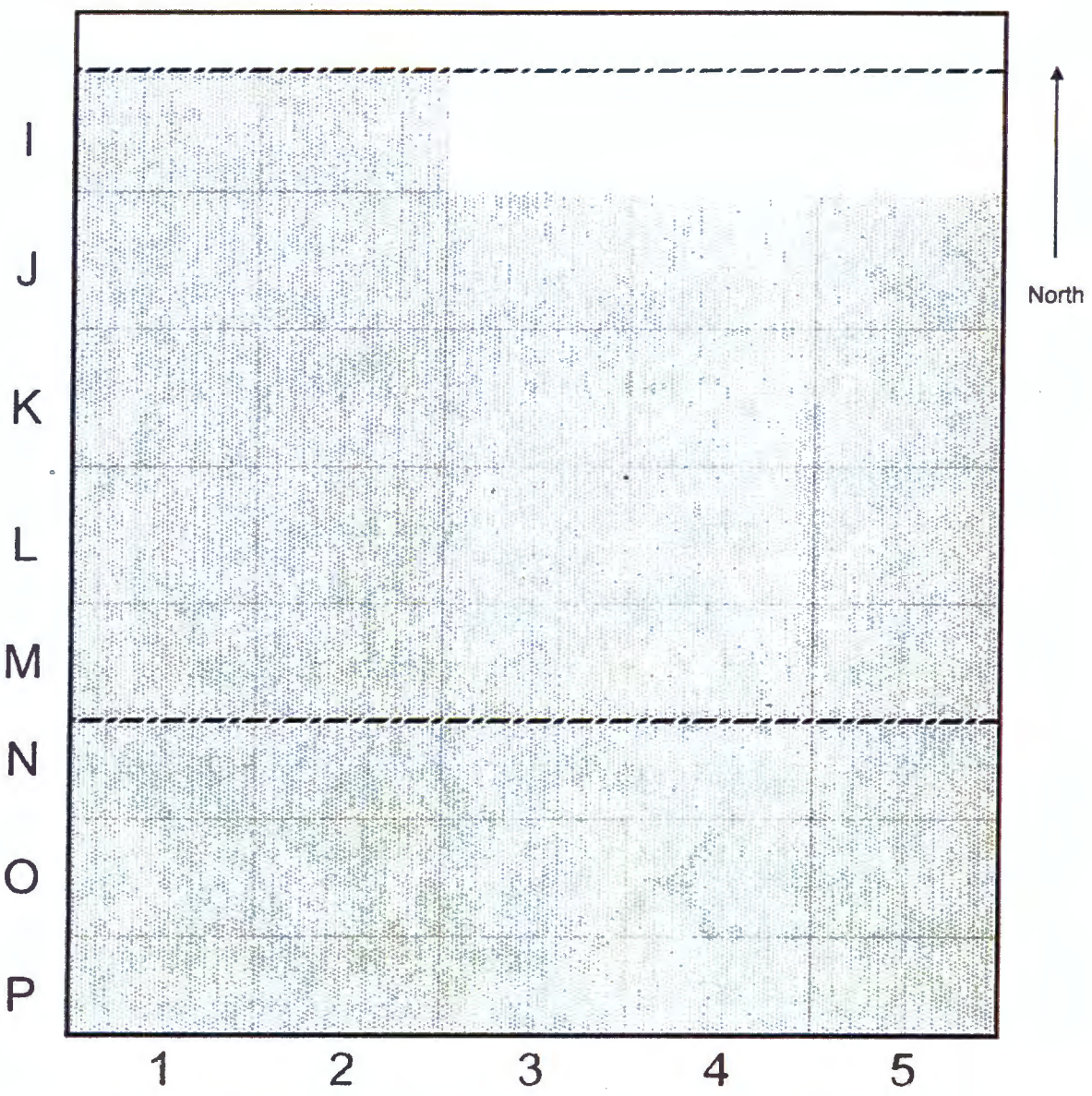
Date:	6/10/2010	Lift:	No 3
Report:	05-016-086	Operator:	R.M. Lunday
Map No:	3 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

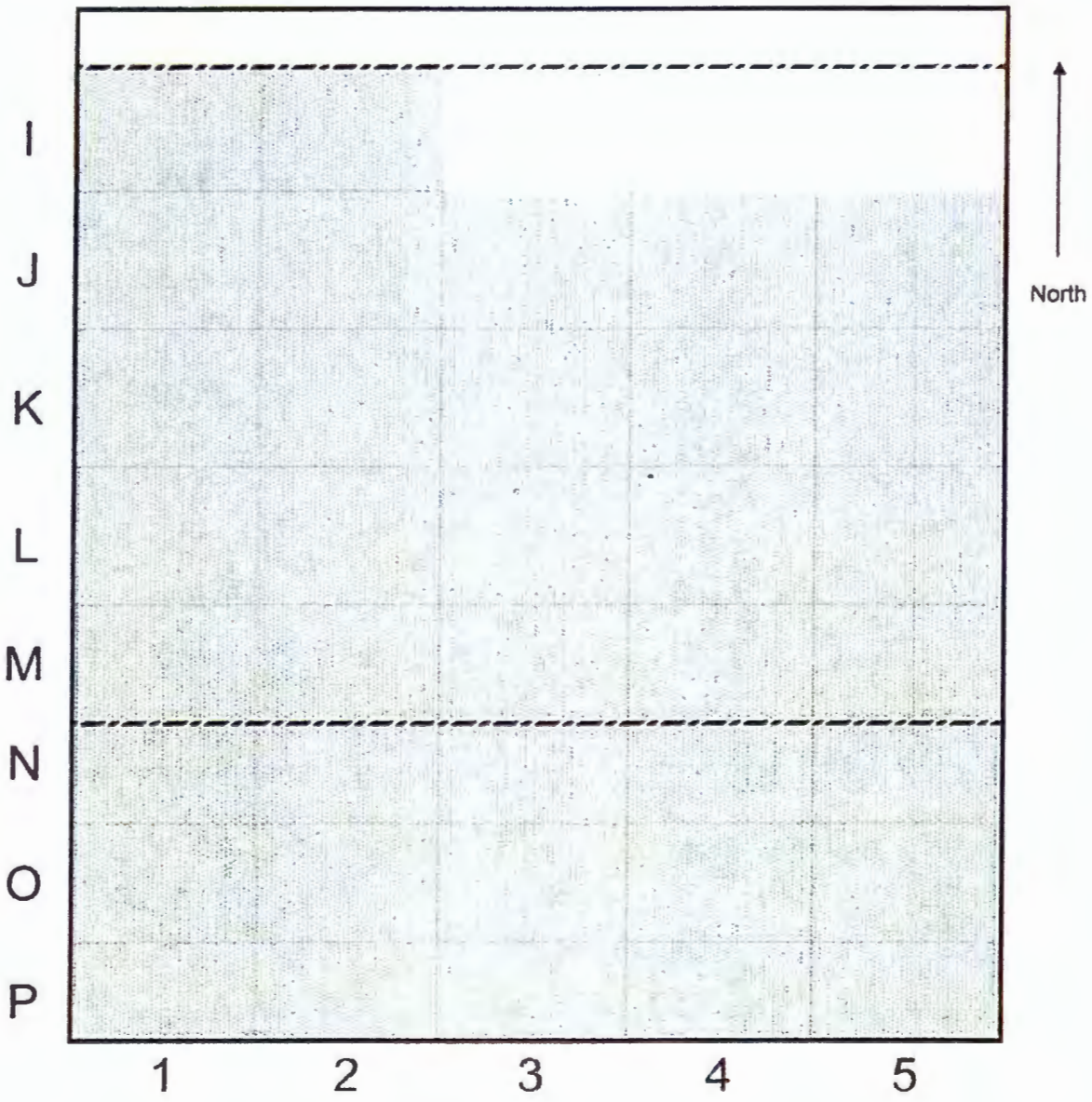
Date	6/10/2010	Lift:	No. 4
Report:	05-016-086	Operator:	R.M. Lunday
Map No:	4 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

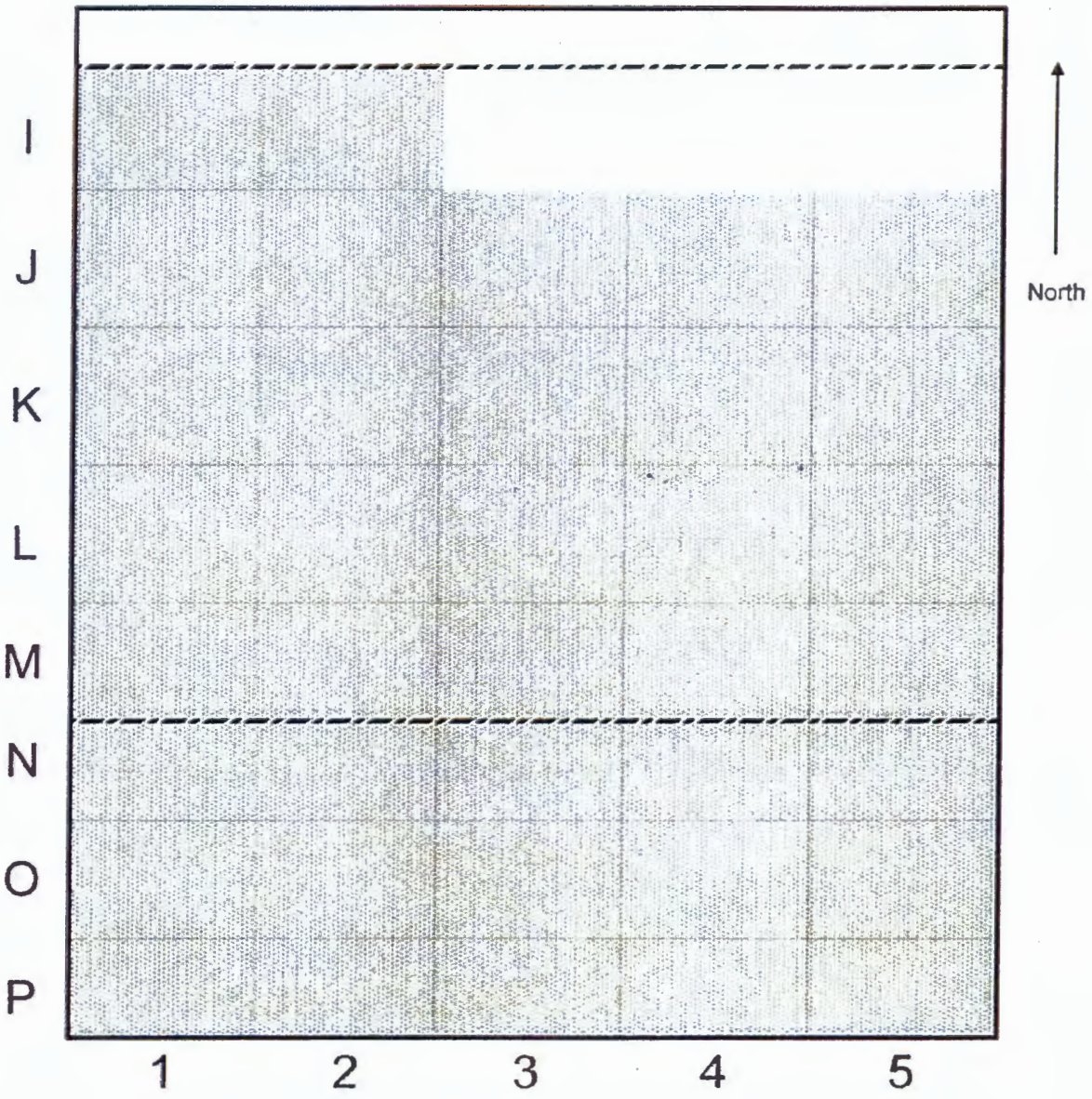
Date	6/10/2010	Lift	No 5
Report	05-016-086	Operator	R.M Lunday
Map No.	5 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

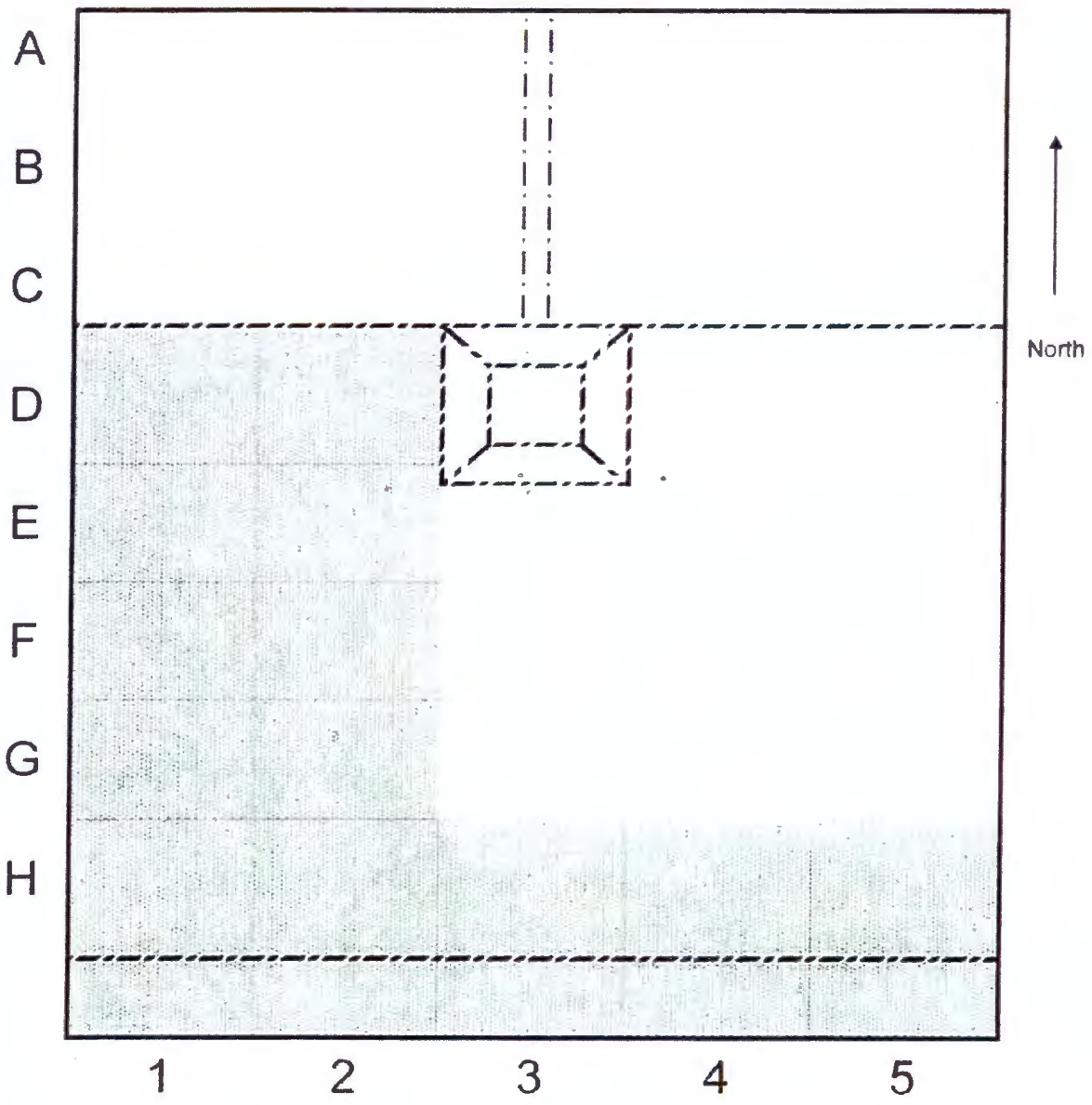
Date:	6/10/2010	Lift:	No. 6
Report:	05-016-086	Operator:	R M. Lunday
Map No:	6 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

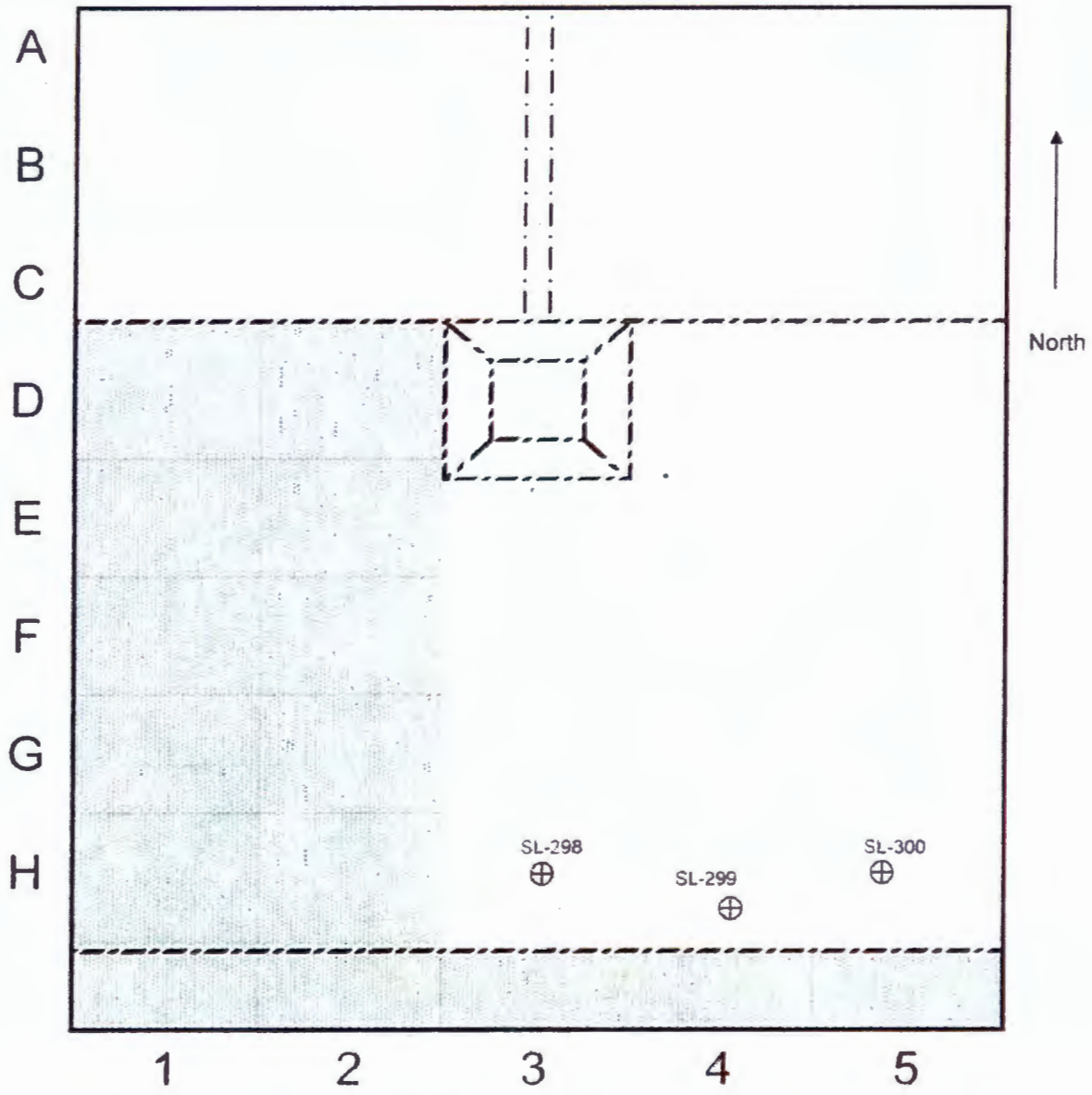
Date	6/10/2010	Lift	No 1
Report	05-016-086	Operator	R M Lunday
Map No.	7 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C. S013213A00

CQA Moisture Density Map Cell 9

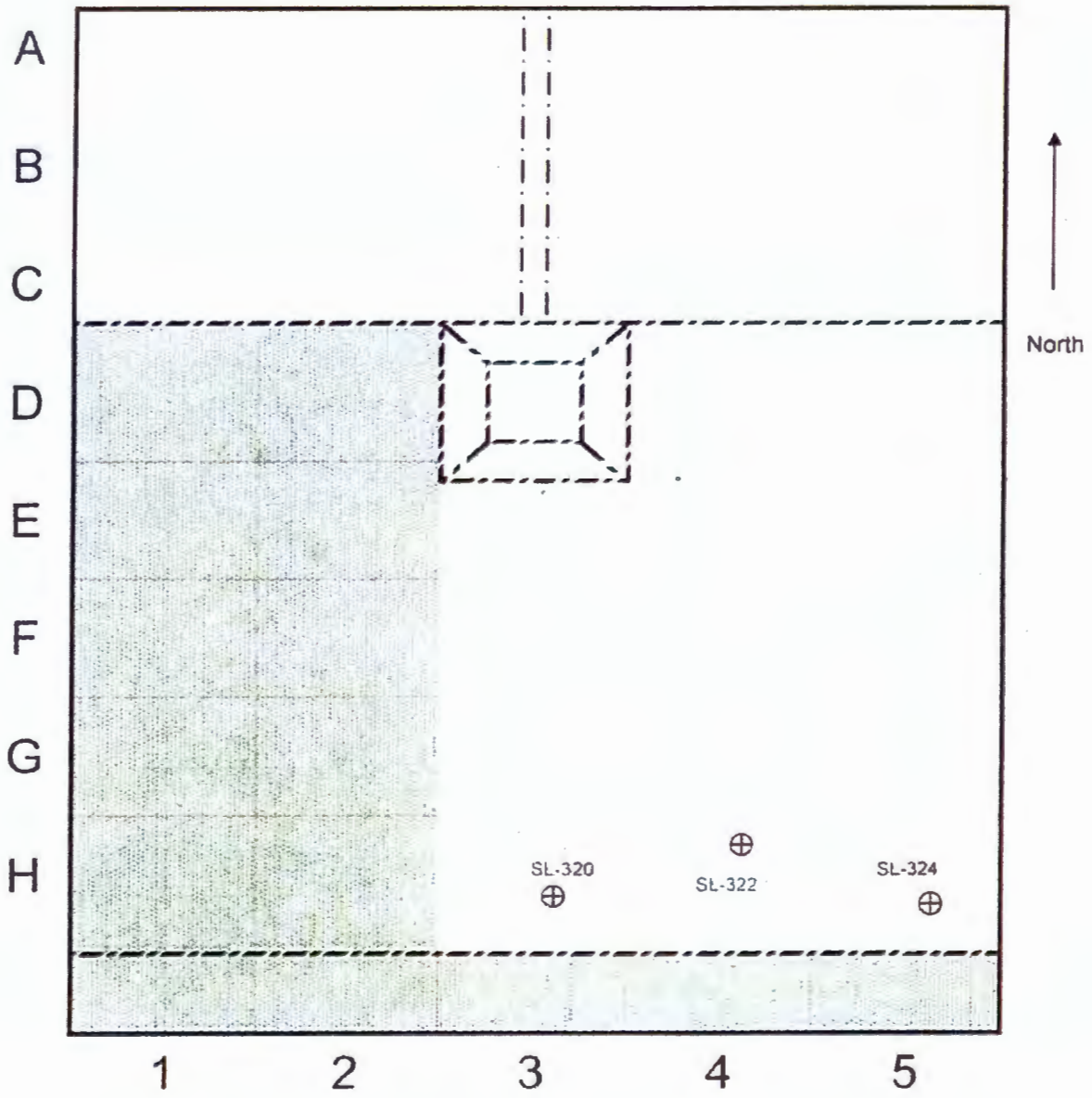
Date	6/10/2010	Lift.	No 2
Report.	05-016-086	Operator:	R.M Lunday
Map No:	8 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

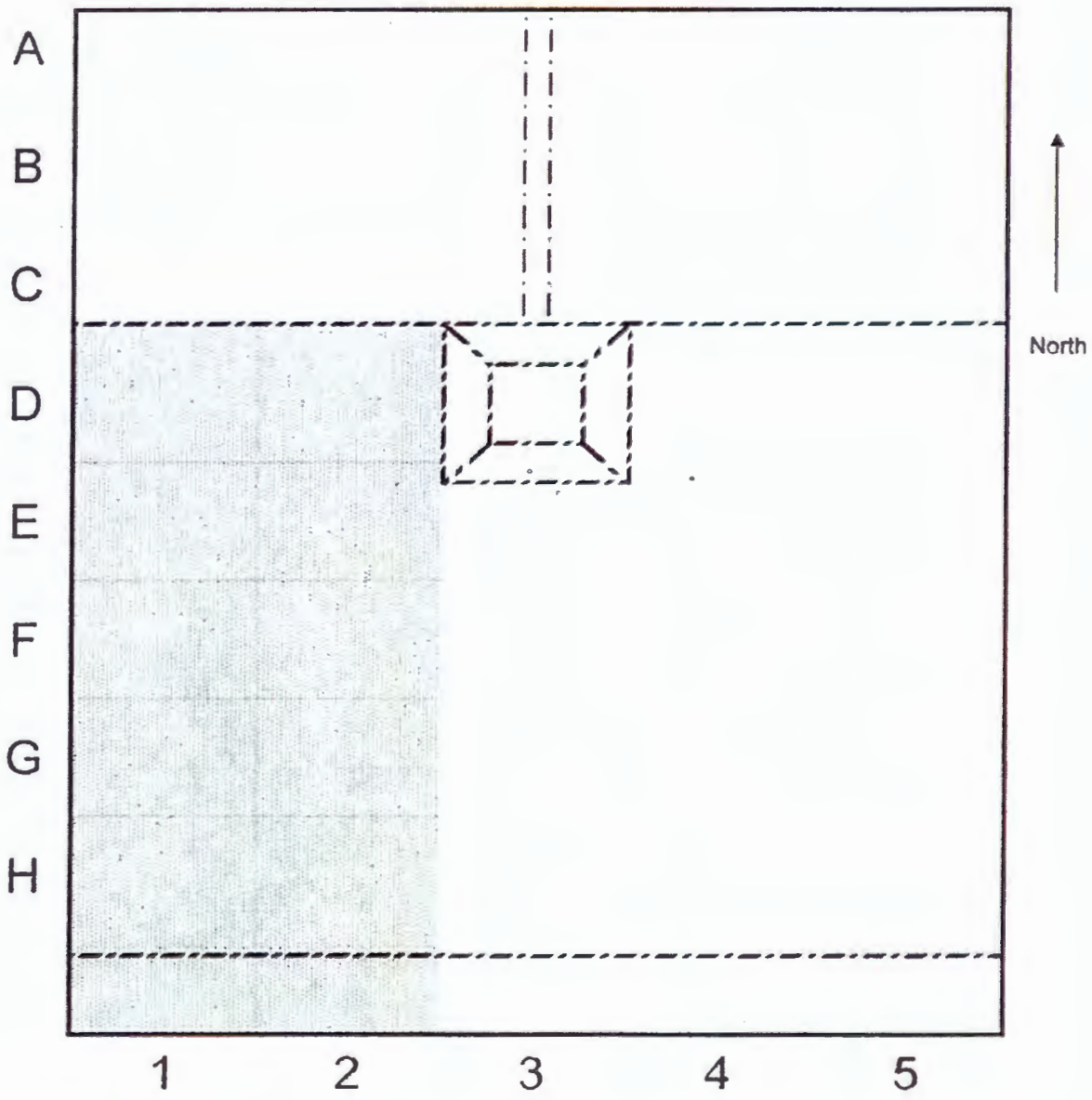
Date	6/10/2010	Lift	No 3
Report	05-016-086	Operator	R M Lunday
Map No.	9 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

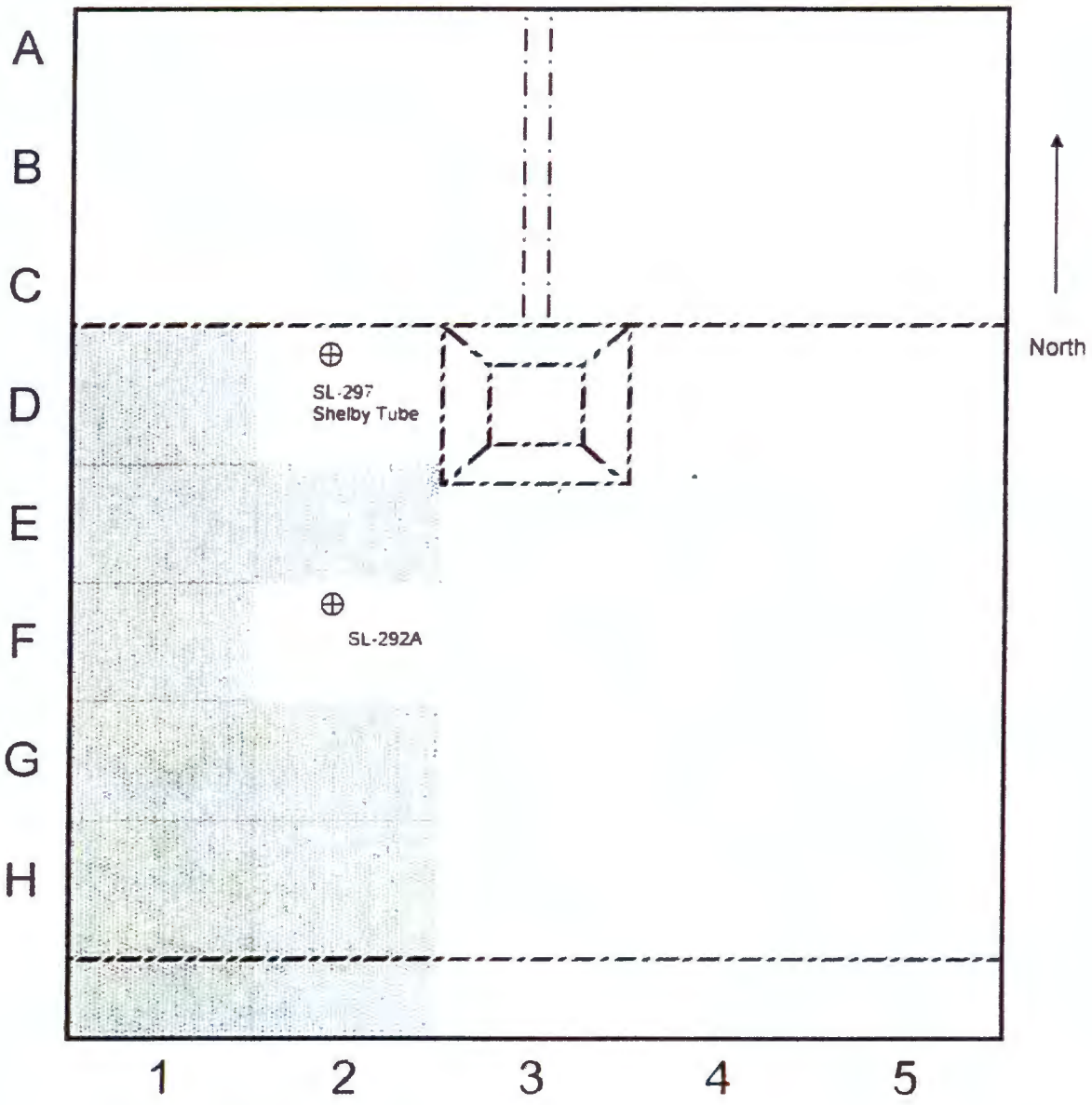
Date	6/10/2010	Lift	No 4
Report:	05-016-086	Operator:	R.M. Lunday
Map No.	10 of 12	Material:	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

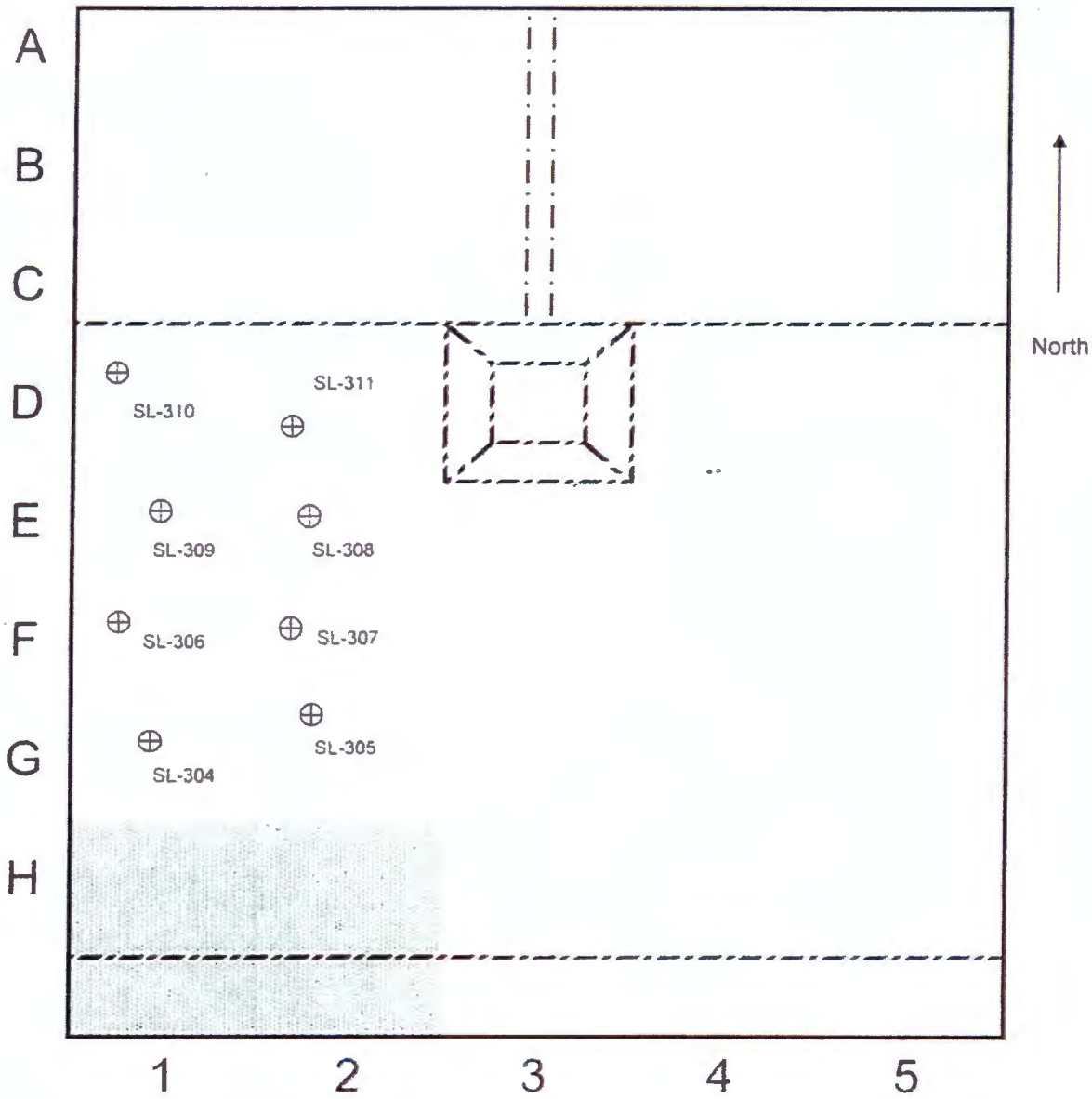
Date	6/10/2010	Lift	No 5
Report:	05-016-086	Operator	R.M Lunday
Map No:	11 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

Date:	6/10/2010	Lift:	No. 6
Report:	05-016-086	Operator:	R.M. Lunday
Map No.	12 of 12	Material	Admix
Grid:	95-ft x 90-ft	Notes	



UNIT WEIGHT OF COMPACTION
BY SAND CONE (ASTM 1556)

ENVIROTECH
2500 N. 11th Street | Enid, OK 73701
(580) 234-8780 | Fax (580) 237-4302

Client:	WCH
Submittal:	05-18J Admix Field Data

Sample Information

Contact Name	Charlie Skiba			Sample ID	SL-309
Project:	S013213A00			Sample Description:	Admix Soil
Project Location	ERDF Cells 9-10			Sampling Date:	6/10/2010
Tested By:	M. Lunday	Date:	6/10/2010	Sampled By:	M. Lunday
Reviewed By	J. Voss	Date:	6/11/2010	Date Received:	6/10/2010
Comments				Report No.:	05-016-086

FIELD UNIT WEIGHT - SAND CONE METHOD

Calibration of Unit Weight of Ottawa Sand

1. Mass of Proctor mold, W_1	3956.10 g
2. Mass of Proctor mold + sand, W_2	5394.20 g
3. Volume of mold, V_1	0.03 ft
4. Dry unit weight, $\gamma_{d\,(sand)} = \frac{W_2 - W_1}{V_1}$	95.11 lb/ft^3

Calibration Cone

5. Mass of bottle + cone + sand (before use), W_3	6115.40 g
6. Mass of bottle + cone + sand (after use), W_4	4482.70 g
7. Weight of sand to fill the cone, $W_c = W_4 - W_3$	3.60 lb

Results from Field Tests

8. Mass of bottle + cone + sand (before use), W_6	6453.6 g
9. Mass of bottle + cone + sand (after use), W_8	3147.2 g
10. Volume of hole, $V_2 = \frac{W_6 - W_8 - W_c}{\gamma_d\,(sand)}$	0.0388 ft^3
11. Mass of gallon can, W_5	372.00 g
12. Mass of gallon can + moist soil, W_7	2597.30 g
13. Mass of gallon can + dry soil, W_9	2276.80 g
14. Moist unit weight of soil in field, $\gamma = W_7 - W_5 / V_2$	126.46 lb/ft^3
15. Moisture content in the field, $w\,(\%) = \frac{W_7 - W_9}{W_9 - W_5} \times 100$	16.8%
16. Dry unit weight in the field, $\gamma_{d\,(sand)} = \gamma / (1+(w\,(\%)/100)$	108.25 lb/ft^3
17. Comparision moisture content =	15.2%
18. Dry unit weight comparison =	113.9 lb/ft^3

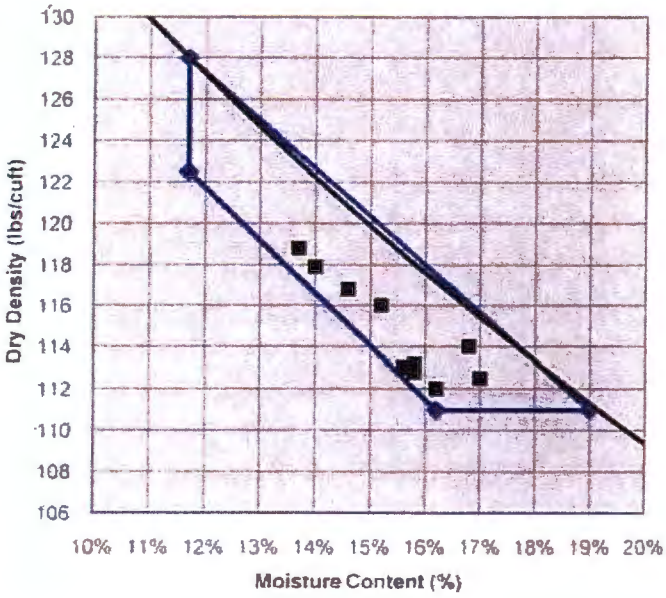
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client	WCH				
Submittal	05-18J Admix Field Data				
Project	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/11/2010	Moisture Std	646	Density Std	2253
Description	Admix Soil	Offsets	Moisture -	Density -	
Report	5-16-087	Acceptable Zone			
Comments	Unless otherwise stated - All test at taken at a depth of 6-in				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-330	4	8:00	3	117.9	14.0%	0.430	N/A	88.0%	H3	Pass
SL-331	4	8:05	3	116.8	14.6%	0.443	15.3%	89.0%	I3	Pass
SL-332	4	9:09	3	113.2	15.8%	0.483	N/A	88.0%	H4	Pass
SL-333	4	9:13	3	112.8	15.8%	0.494	N/A	86.0%	I4	Pass
SL-334	4	9:51	3	113.0	15.6%	0.491	N/A	86.0%	H5	Pass
SL-335	4	9:55	3	118.8	13.7%	0.419	N/A	88.0%	I5	Pass
SL-336	5	11:51	3	112.0	16.2%	0.505	N/A	87.0%	H3	Pass
SL-337	5	11:59	3	116.0	15.2%	0.453	N/A	91.0%	I3	Pass
SL-338	5	12:54	3	112.5	17.0%	0.498	N/A	92.0%	H4	Pass
SL-339	5	12:58	3	114.0	16.8%	0.479	N/A	95.0%	I4	Pass

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-330				
SL-331	SC	1915.4	1710	371.4
SL-332				
SL-333				
SL-334				
SL-335				
SL-336				
SL-337				
SL-338				
SL-339				



Envirotech Engineering & Consulting, Inc

6/16/10
Date

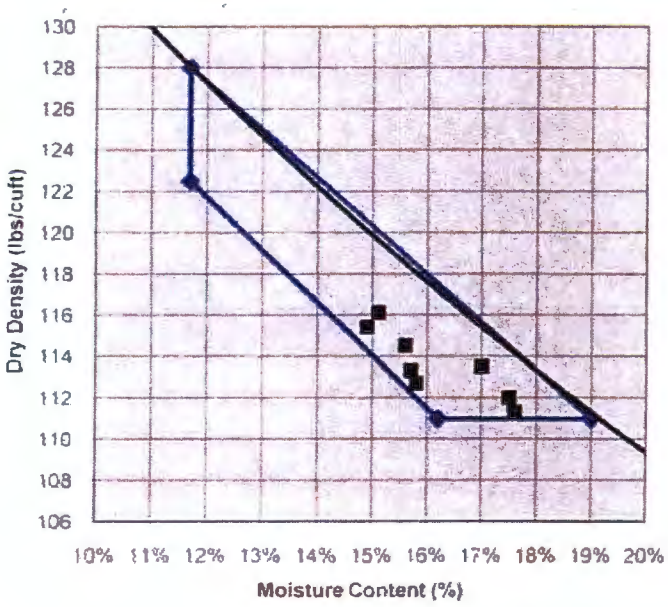
FIELD DENSITY TEST (ASTM D-6938)

ENVIROTECH

Client:	WCH				
Submittal	05-18J Admix Field Data				
Project:	S013213A00	Model	3430	Troxler ID	27881
Test Date	6/11/2010	Moisture Std:	646	Density Std	2253
Description	Admix Soil	Offsets	Moisture -	Density -	
Report.	5-16-087	Acceptable Zone			
Comments:	Unless otherwise stated - All test at taken at a depth of 6-in.				

Test No	Lift	Time	No. of Passes	Dry Density lbs/cuft	Moisture Content (%)	Void Ratio	Moist Verify	% Saturation	Grid Zone	Pass / Fail
SL-340	5	13:20	3	111.3	17.6%	0.515	N/A	92.0%	H5	Pass
SL-341	5	13:24	3	116.1	15.1%	0.452	N/A	90.0%	I5	Pass
SL-342	6	14:53	3	112.0	17.5%	0.505	N/A	94.0%	I3	Pass
SL-343	6	14:58	3	113.3	15.7%	0.488	N/A	87.0%	H3	Pass
SL-344	6	15:04	3	115.4	14.9%	0.461	N/A	87.0%	H4	Pass
SL-345	6	15:09	3	114.5	15.6%	0.473	N/A	89 0%	I4	Pass
SL-346	6	15:40	3	113.5	17.0%	0.485	N/A	95.0%	I5	Pass
SL-347	6	15:43	3	112.7	15.8%	0.495	N/A	86.0%	H5	Pass
							N/A			
							N/A			

Sample ID	Tare No.	Tare + Wet	Tare + Dry	Tare (g)
SL-340				
SL-341				
SL-342				
SL-343				
SL-344				
SL-345				
SL-346				
SL-347				



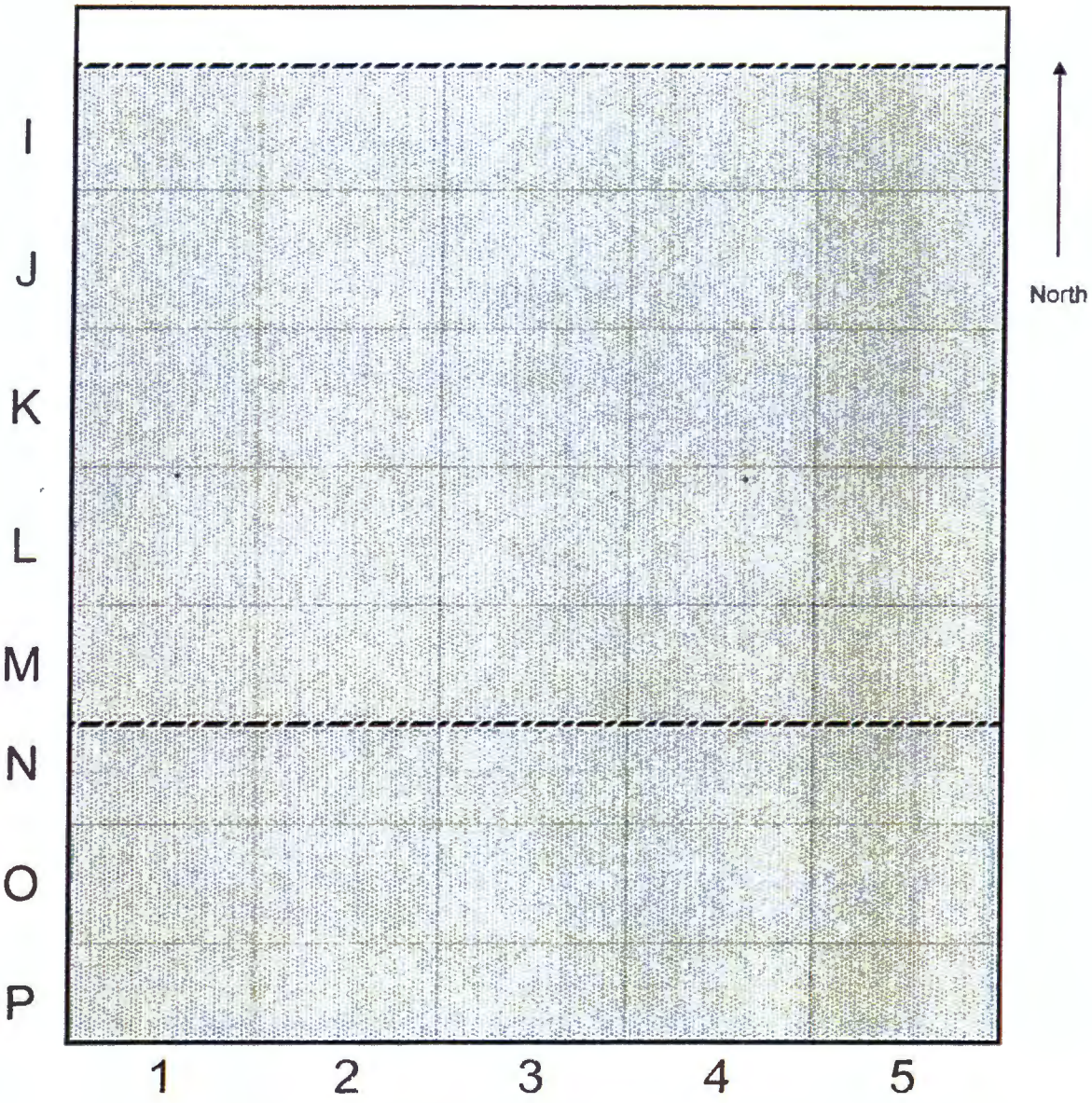
Envirotech Engineering & Consulting, Inc

6/16/10
Date

S/C: S013213A00

CQA Moisture Density Map Cell 9

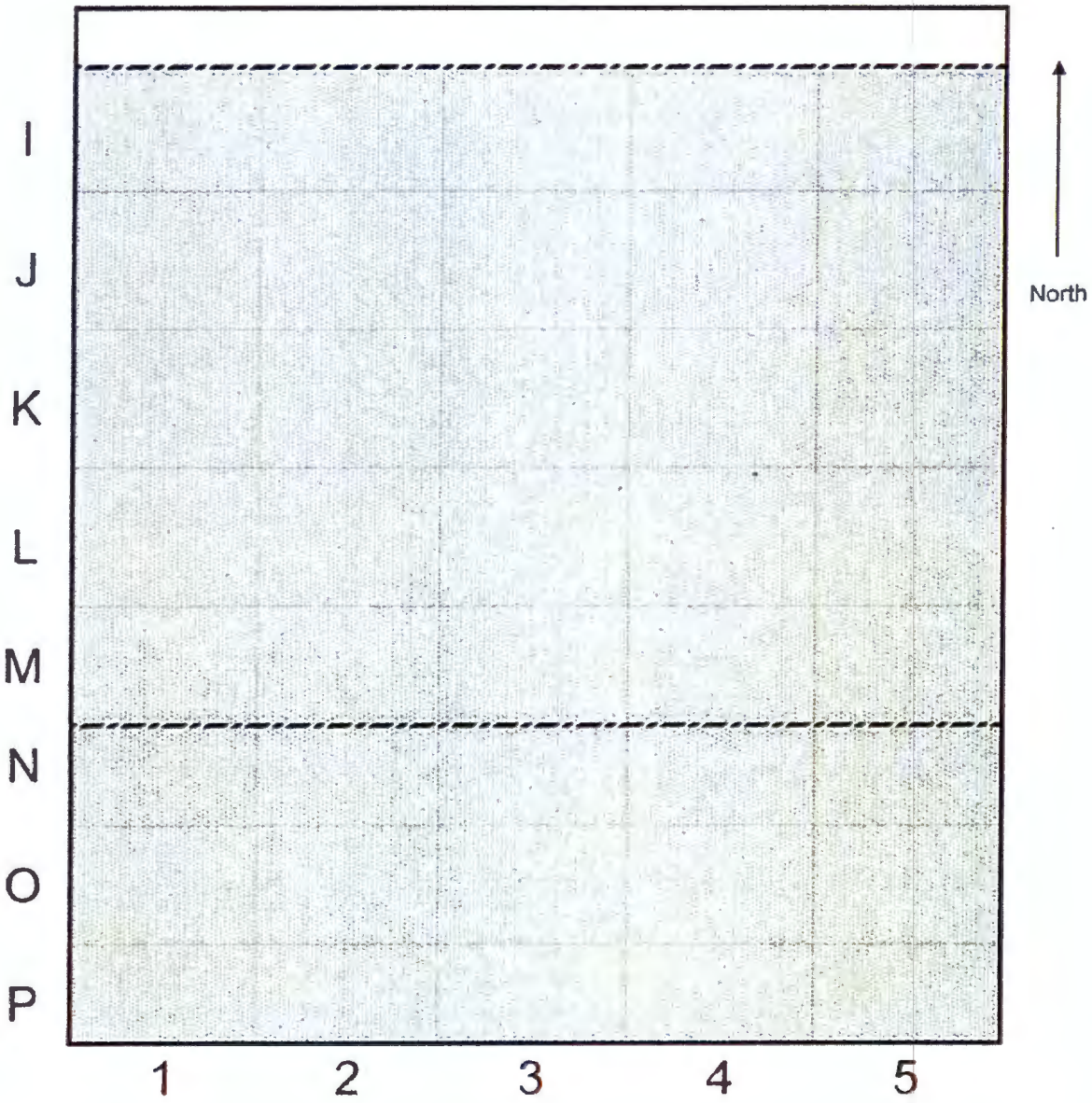
Date:	6/11/2010	Lift:	No. 1
Report:	5-16-087	Operator:	R M. Lunday
Map No:	1 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

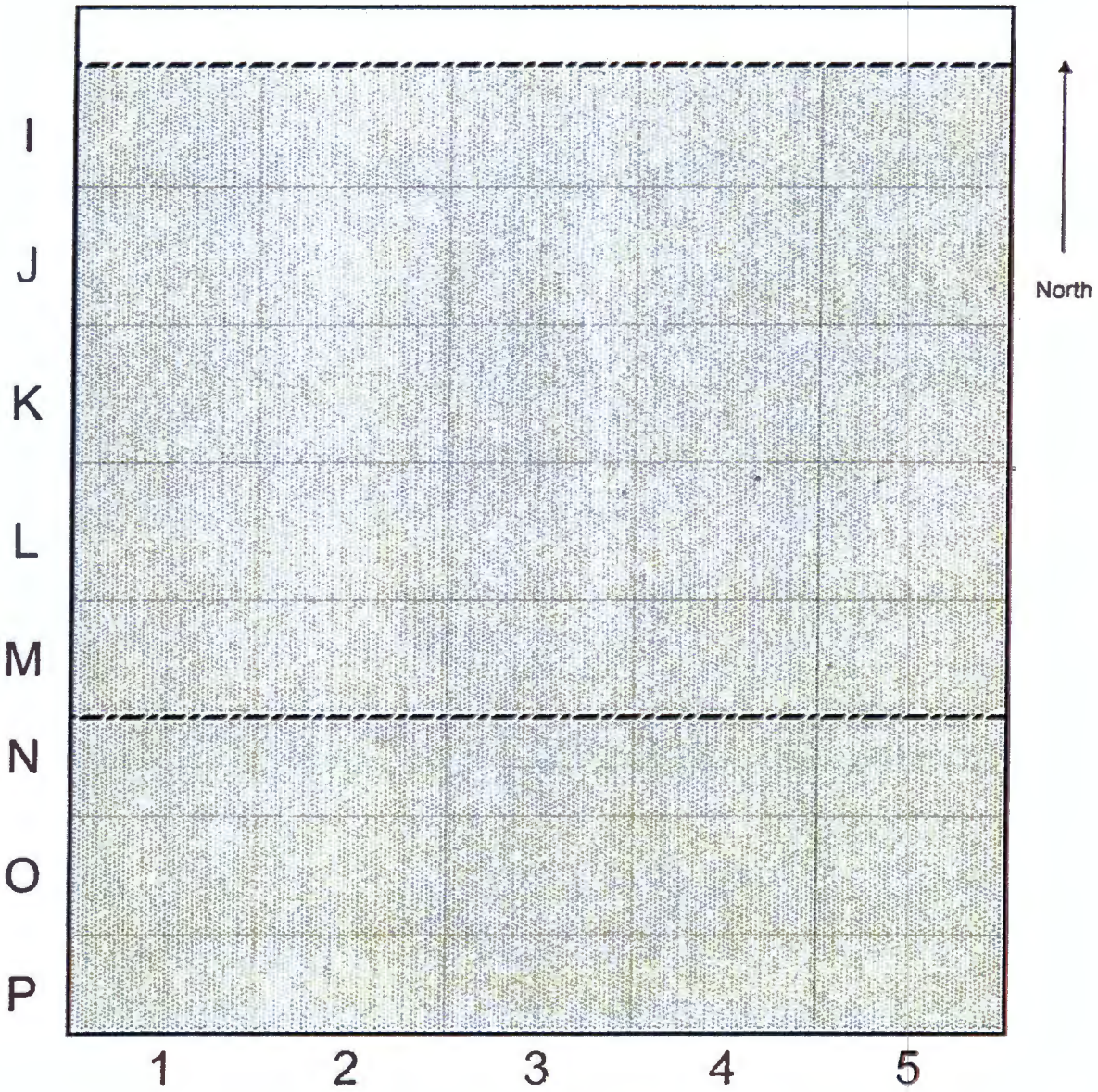
Date	6/11/2010	Lift	No 2
Report:	5-16-087	Operator	R M Lunday
Map No:	2 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C: S013213A00

CQA Moisture Density Map Cell 9

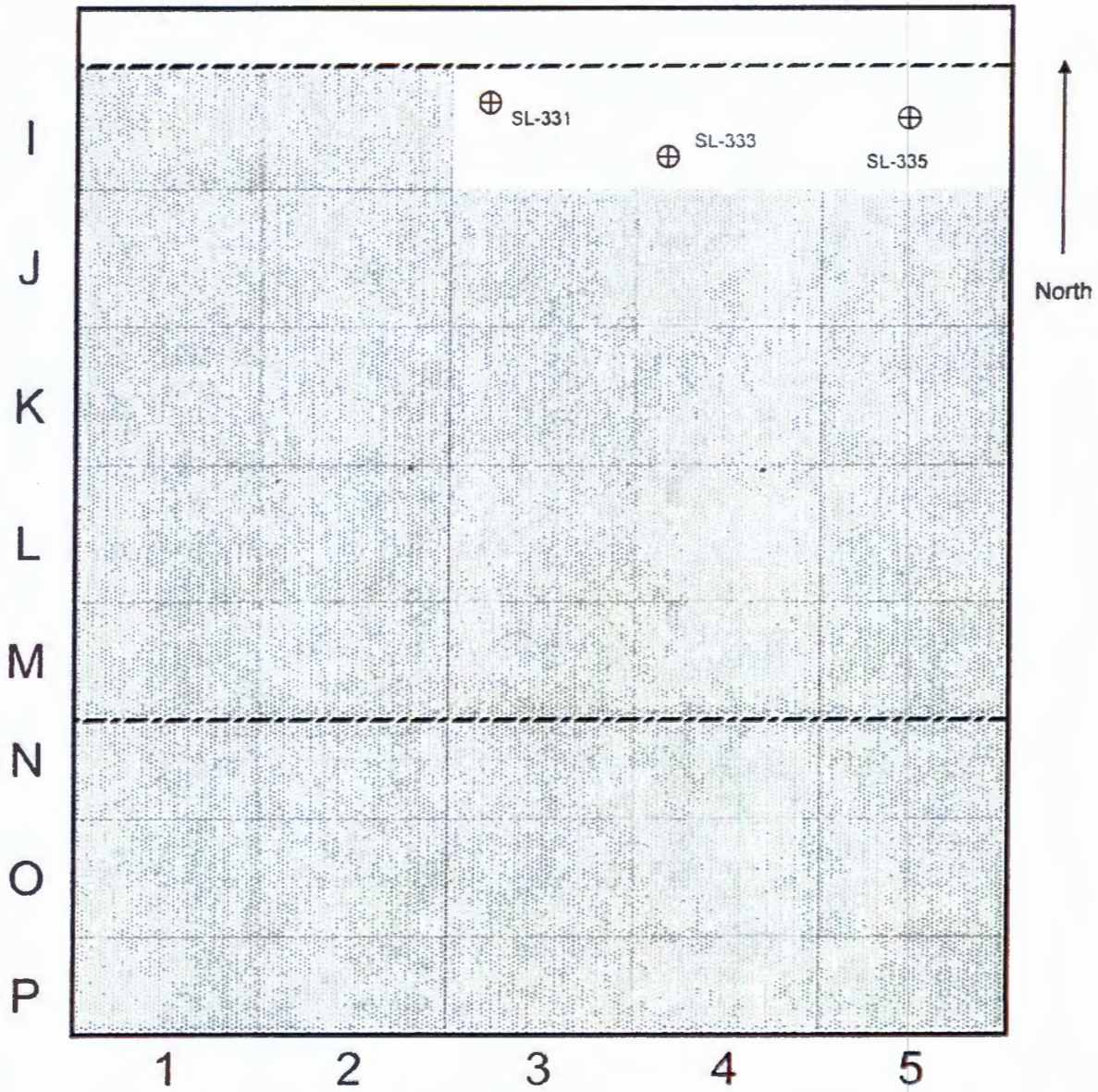
Date:	6/11/2010	Lift.	No. 3
Report:	5-16-087	Operator	R.M Lunday
Map No:	3 of 12	Material.	Admix
Grid:	95-ft x 90-ft	Notes.	



S/C: S013213A00

CQA Moisture Density Map Cell 9

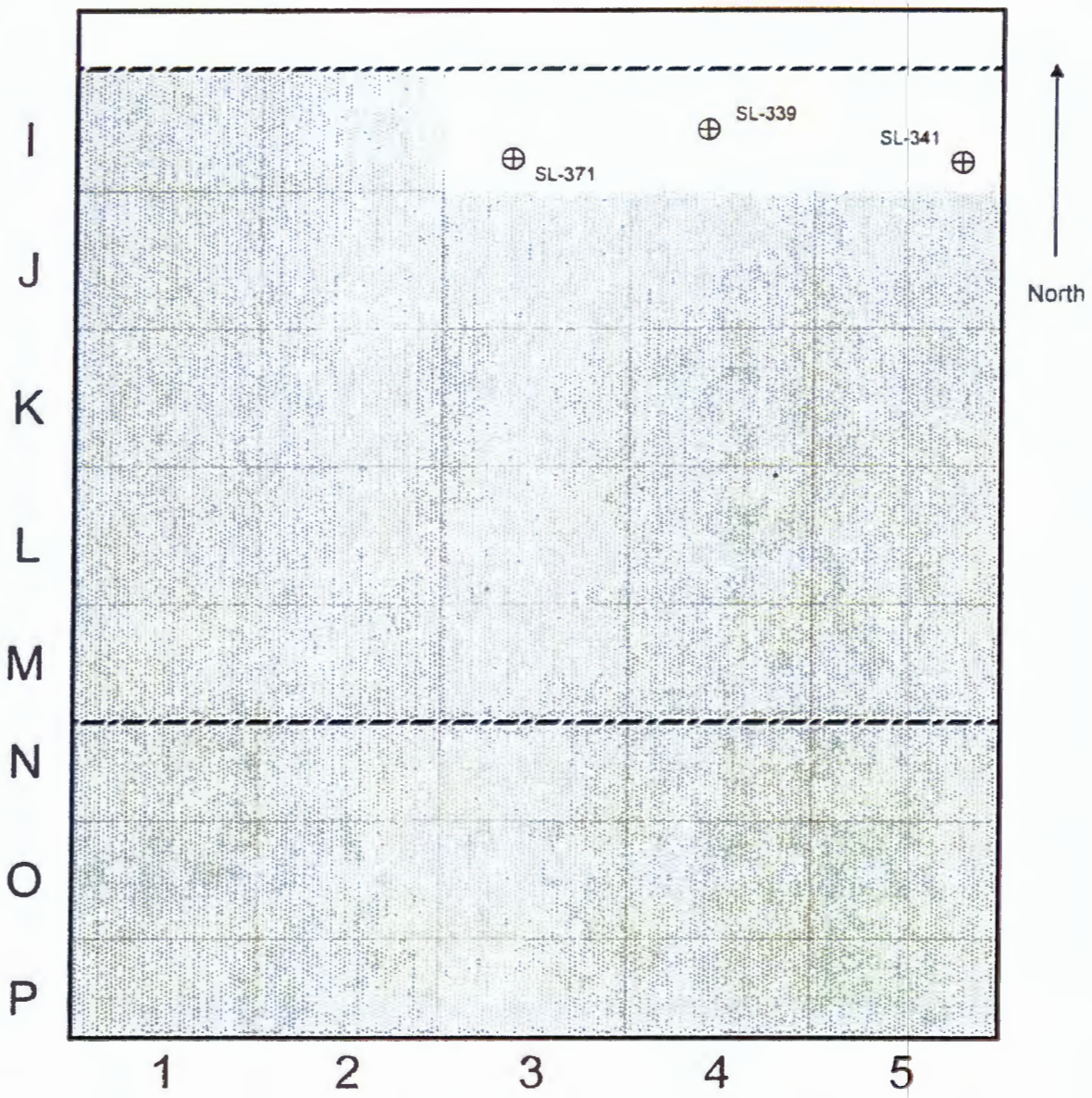
Date:	6/11/2010	Lift:	No. 4
Report:	5-16-087	Operator:	R.M. Lunday
Map No:	4 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

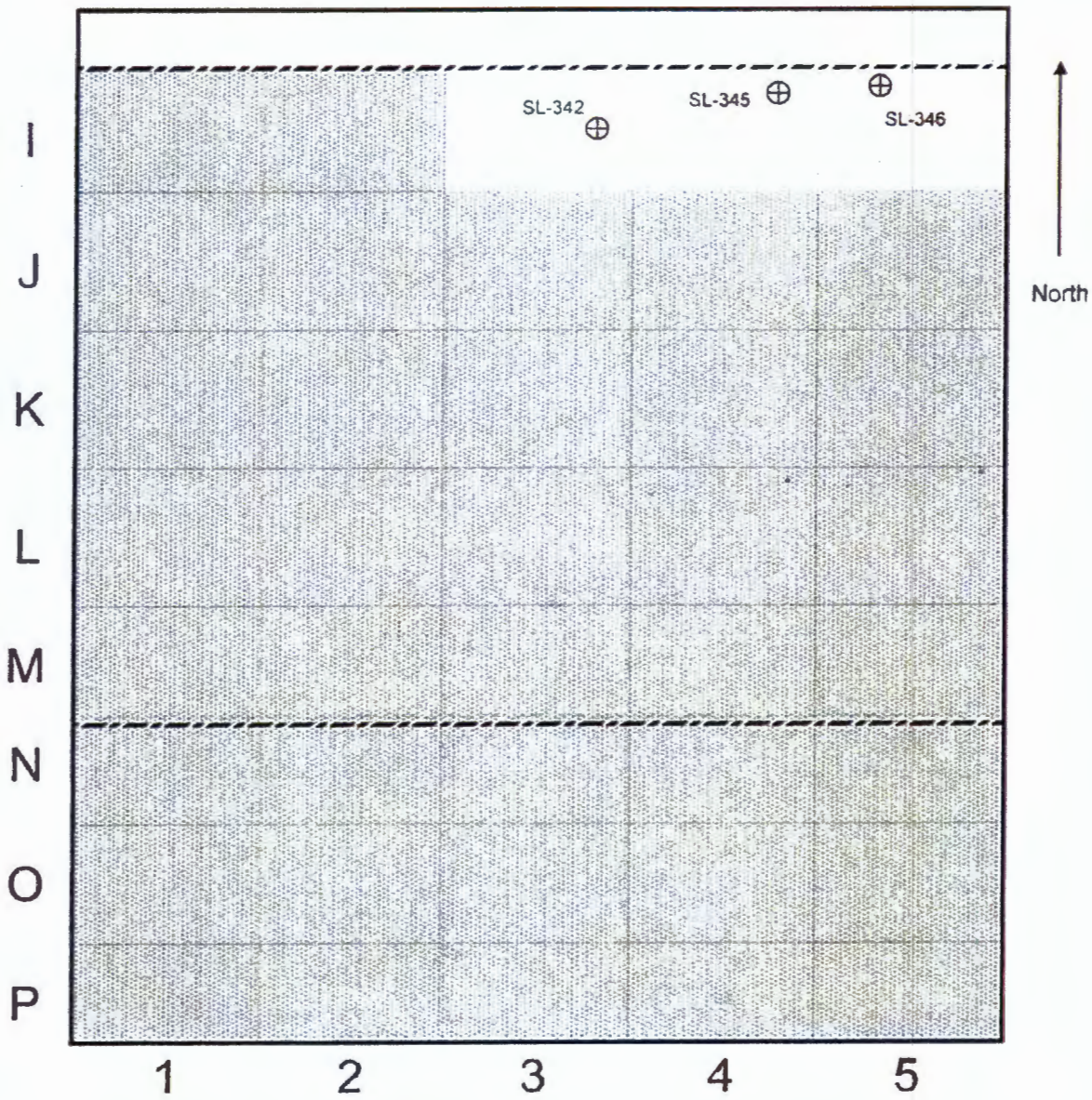
Date:	6/11/2010	Lift:	No. 5
Report:	5-16-087	Operator:	R.M. Lunday
Map No.	5 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

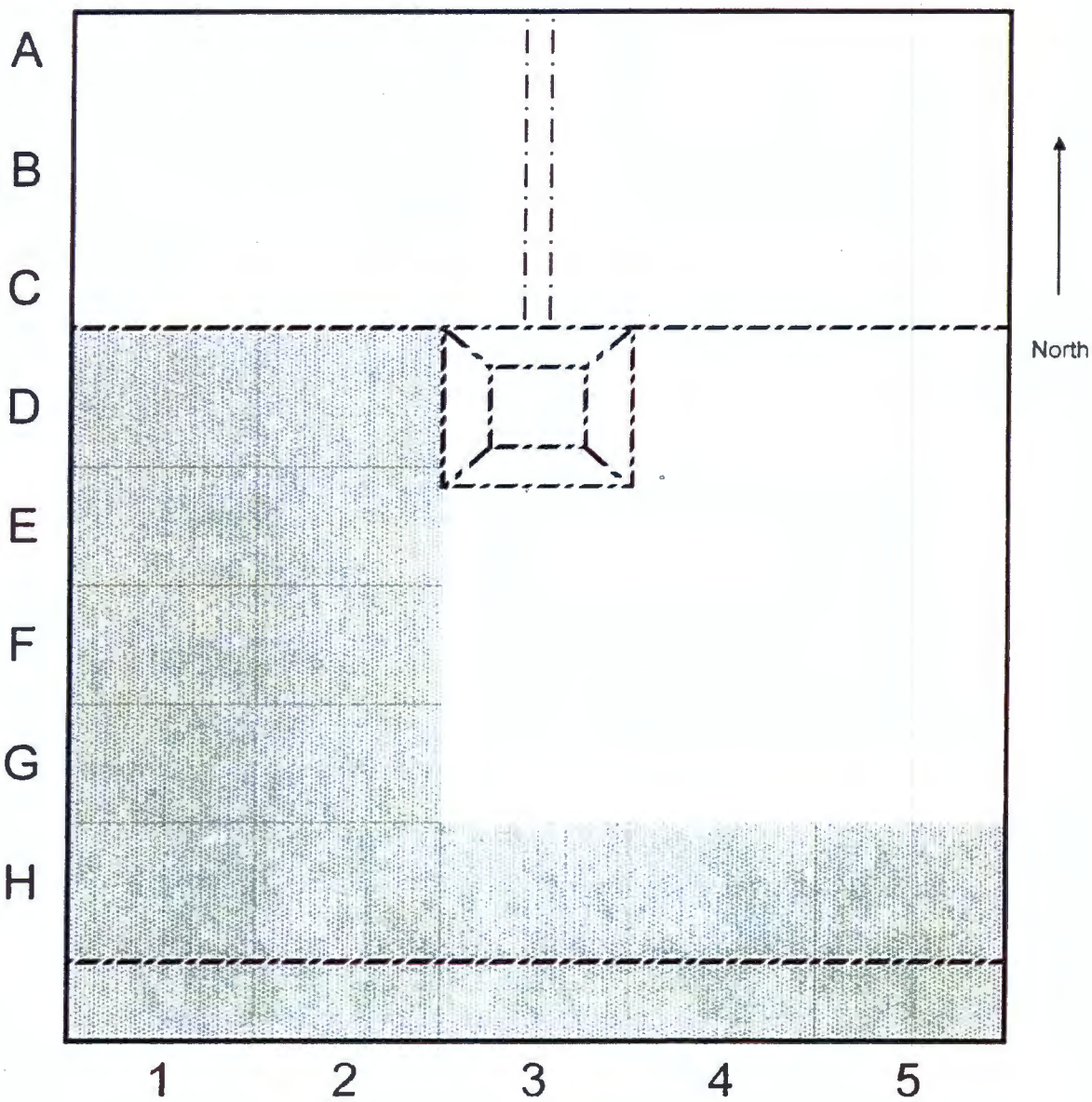
Date:	6/11/2010	Lift:	No. 6
Report:	5-16-087	Operator:	R.M. Lunday
Map No:	6 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C S013213A00

CQA Moisture Density Map Cell 9

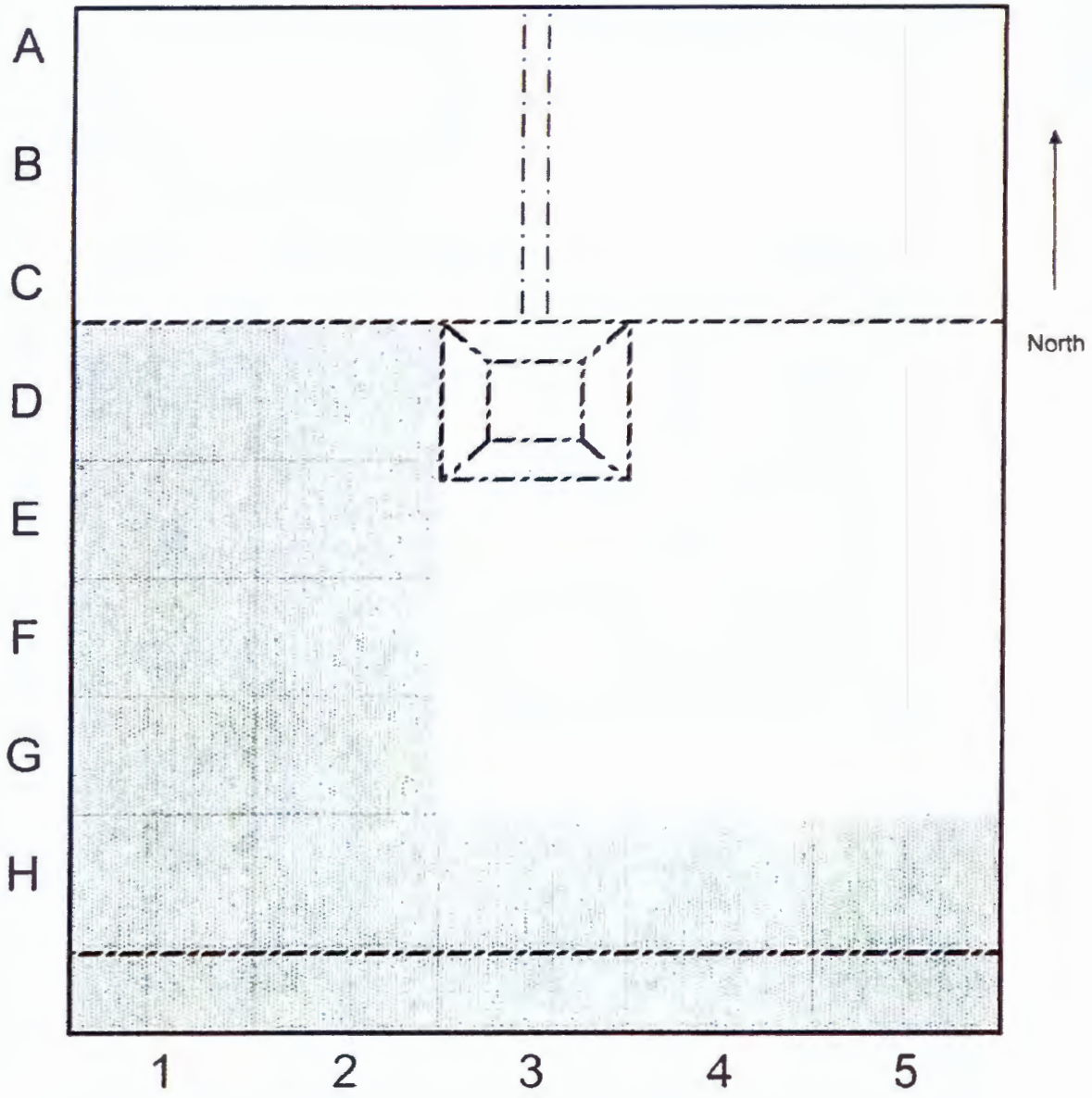
Date:	6/11/2010	Lift:	No. 1
Report:	5-16-087	Operator:	R.M Lunday
Map No:	7 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes:	



S/C: S013213A00

CQA Moisture Density Map Cell 9

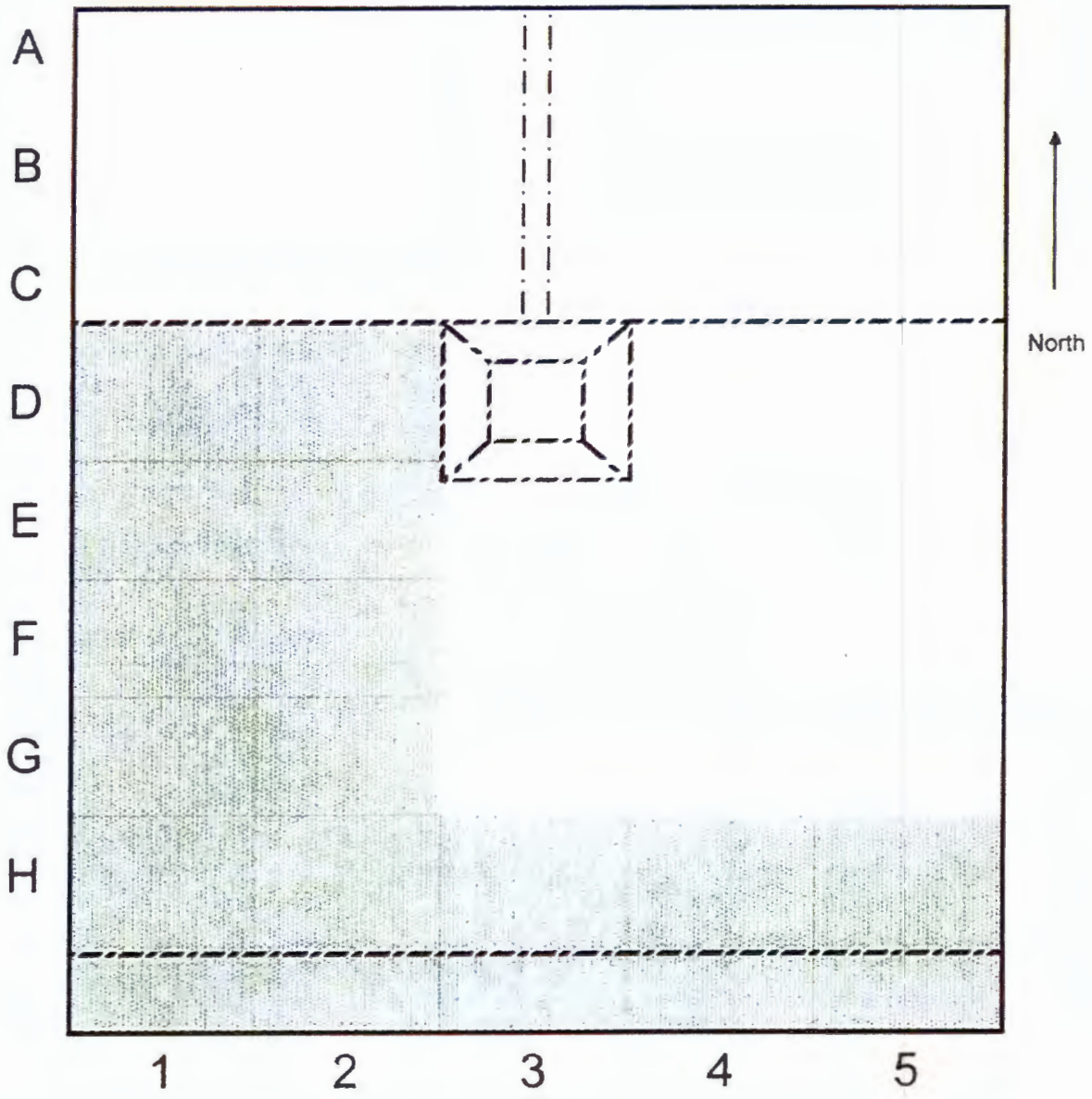
Date:	6/11/2010	Lift	No 2
Report:	5-16-087	Operator:	R M Lunday
Map No:	8 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

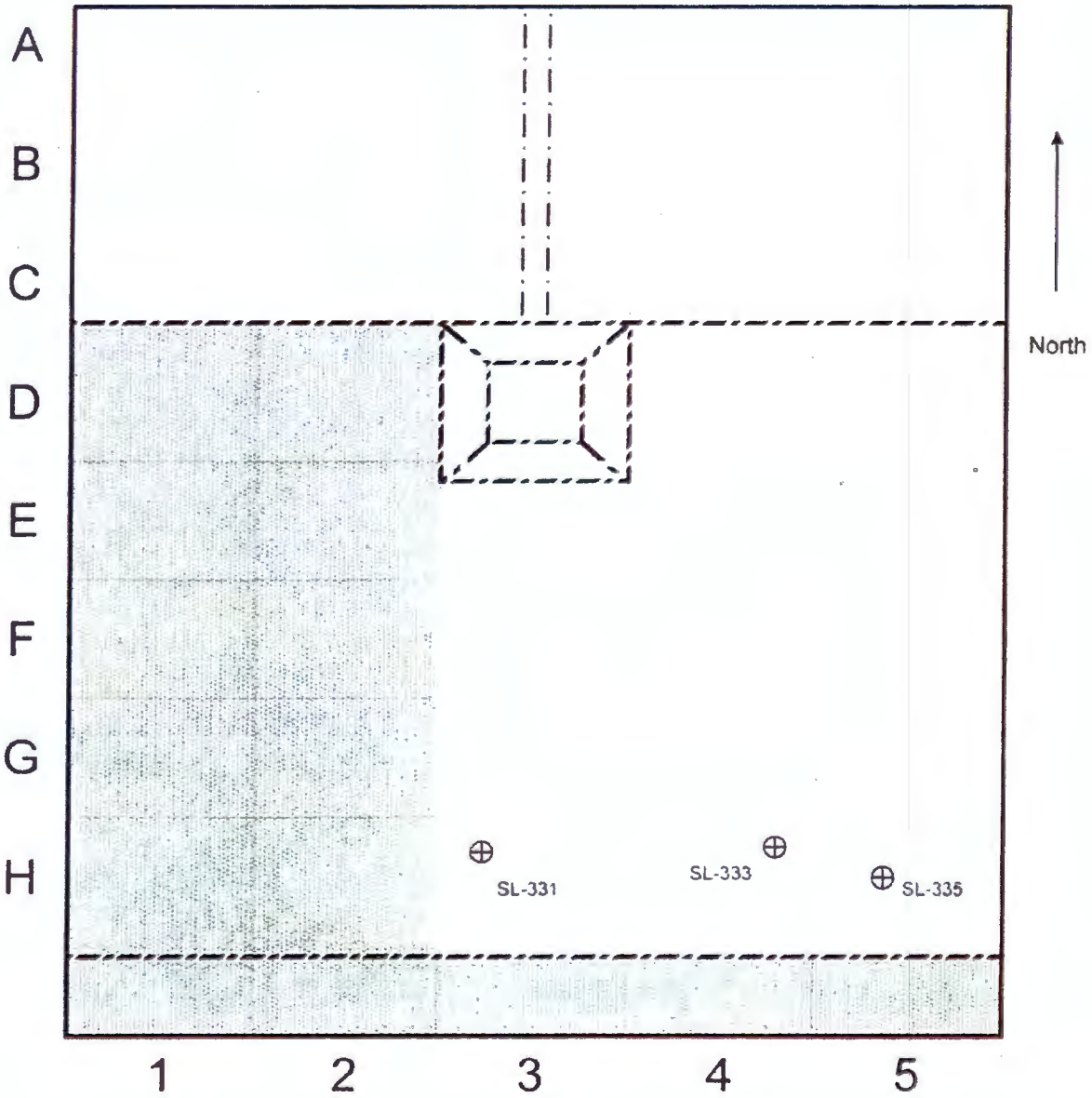
Date	6/11/2010	Lift	No 3
Report	5-16-087	Operator	R.M. Lunday
Map No	9 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



S/C S013213A00

CQA Moisture Density Map Cell 9

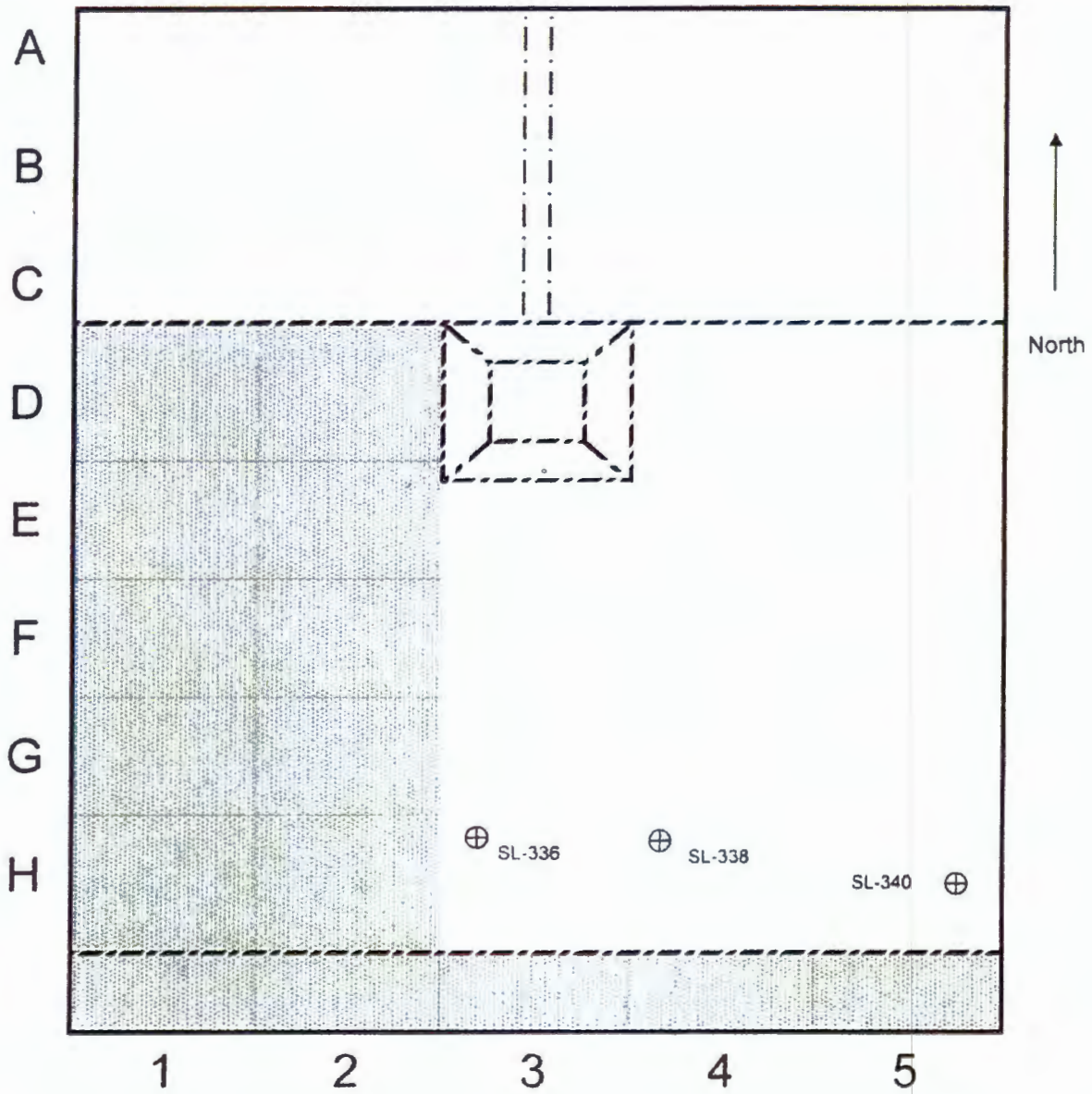
Date:	6/11/2010	Lift:	No 4
Report:	5-16-087	Operator:	R.M. Lunday
Map No.	10 of 12	Material	Admix
Grid	95-ft x 90-ft	Notes	



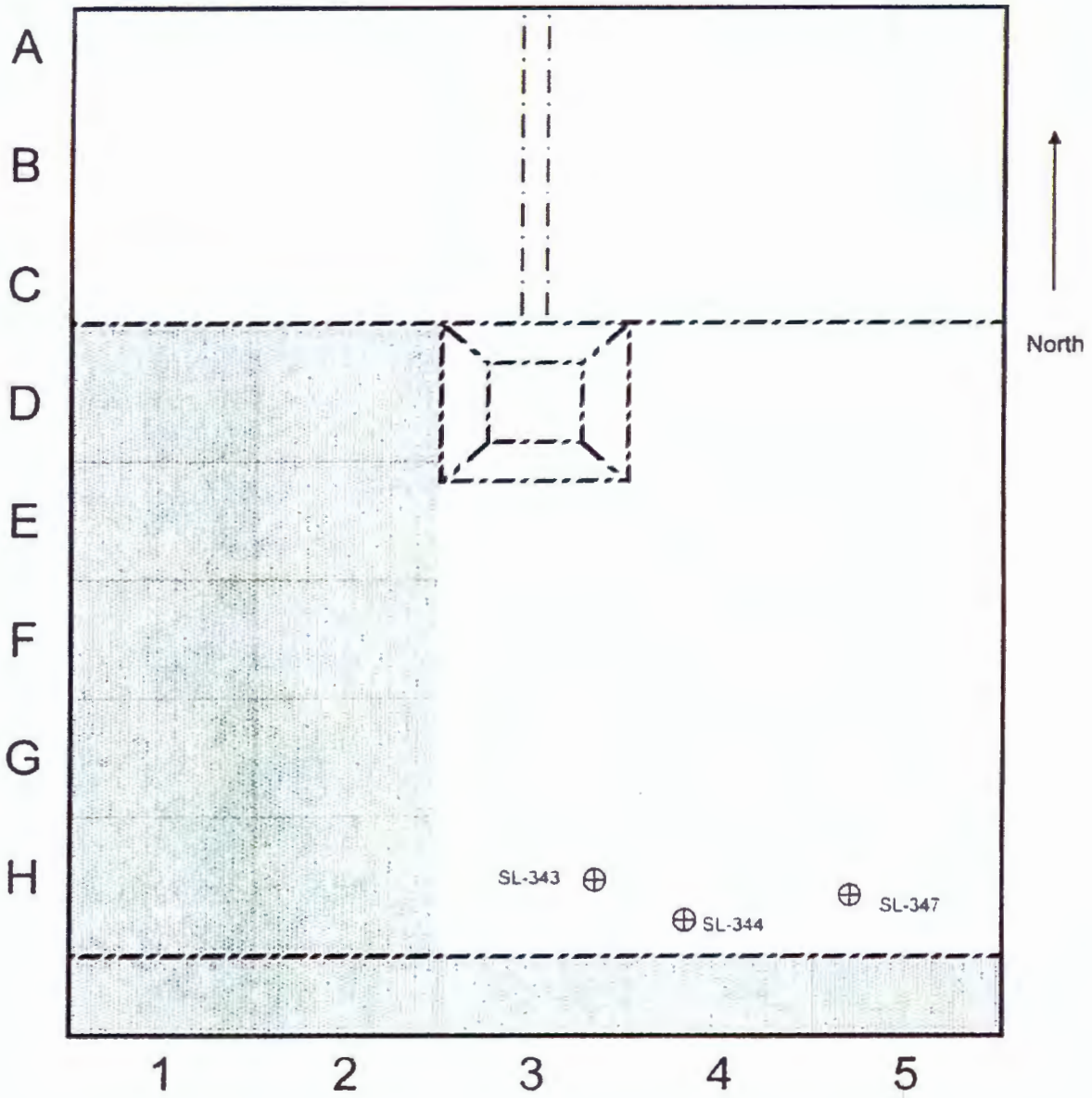
S/C S013213A00

CQA Moisture Density Map Cell 9

Date	6/11/2010	Lift	No. 5
Report:	5-16-087	Operator:	R M. Lunday
Map No:	11 of 12	Material:	Admix
Grid:	95-ft x 90-ft	Notes	



S/C. S013213A00

CQA Moisture Density Map Cell 9

Date	6/11/2010	Lift	No. 6
Report.	5-16-087	Operator	R M. Lunday
Map No:	12 of 12	Material.	Admix
Grid	95-ft x 90-ft	Notes.