Independent Expert Engineering Investigation and Review Panel

Report on Mount Polley Tailings Storage Facility Breach

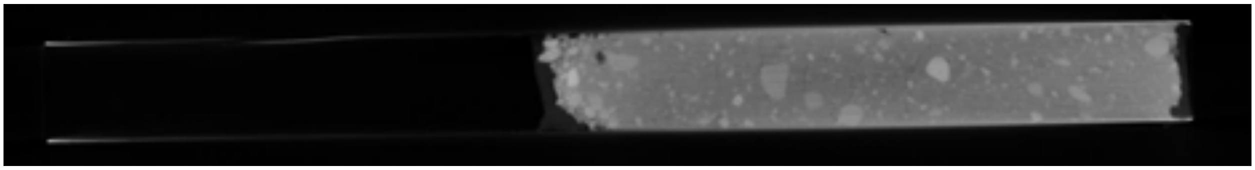
Appendix E: ATTACHMENTS

Appendix E
Attachment 1
CT Scans of Tube Samples

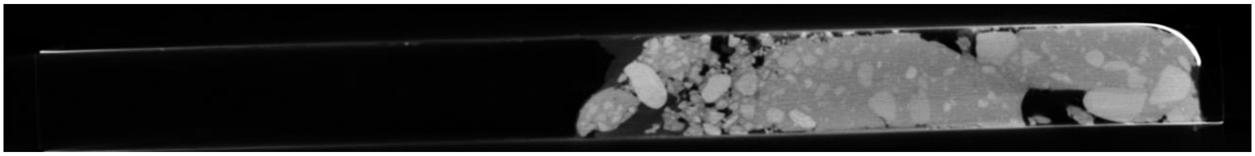
MR14-101 – Sa 1
Depth: 4.9 to 5.1 m / El. 928.1 to 927.9 m
INFERRED UPPER TILL

MR14-101 – Sa 2
Depth: 5.6 to 5.8 m / El. 927.4 to 927.2 m
INFERRED UPPER TILL

MR14-101 – Sa 3
Depth: 6.3 to 6.6 m / El. 926.7 to 926.4 m
INFERRED UPPER TILL



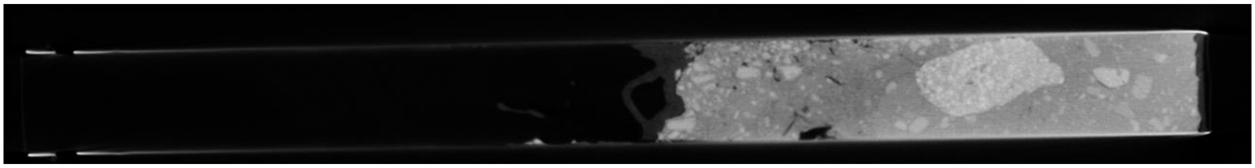
MR14-101 – Sa 5
Depth: 14.6 to 15.1 m / El. 918.4 to 917.9 m
INFERRED LOWER TILLS (BASAL TILL)



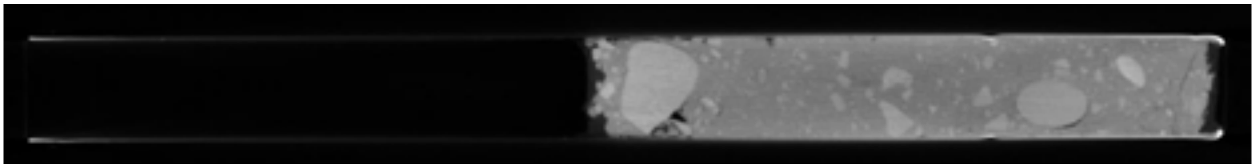
MR14-101 – Sa 6
Depth: 15.1 to 15.4 m / El. 917.9 to 917.6 m
INFERRED LOWER TILLS (BASAL TILL)

MR14-101 – Sa 7
Depth: 16.1 to 16.3 m / El. 916.9 to 916.7 m
INFERRED LOWER TILLS (BASAL TILL)

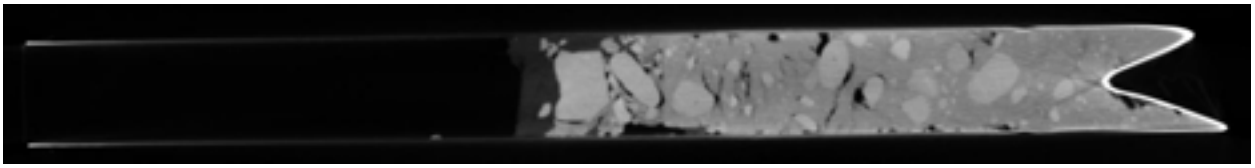
MR14-101 – Sa 8
Depth: 16.5 to 16.9 m / El. 916.5 to 916.1 m
INFERRED LOWER TILLS (LOWER GLACIOLACUSTRINE)



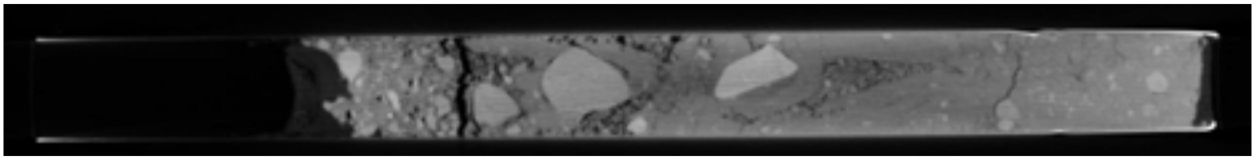
MR14-102 – Sa 1
Depth: 3.1 to 3.7 m / El. 929.4 to 928.8 m
INFERRED UPPER TILL



MR14-102 – Sa 2
Depth: 3.7 to 4.1 m / El. 928.8 to 928.4 m
INFERRED UPPER TILL

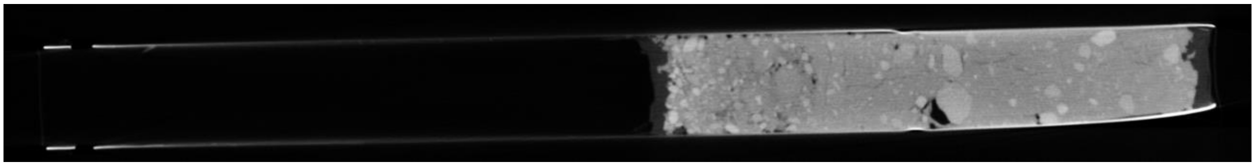


MR14-102 – Sa 3
Depth: 6.5 to 6.8 m / El. 926 to 925.7 m
INFERRED UPPER TILL



MR14-102 – Sa 5
Depth: 9.1 to 9.7 m / El. 923.4 to 922.8 m
INFERRED UPPER TILL

MR14-102 – Sa 6
Depth: 9.9 to 10.1 m / El. 922.6 to 922.4 m
INFERRED UPPER TILL



MR14-103 – Sa 1

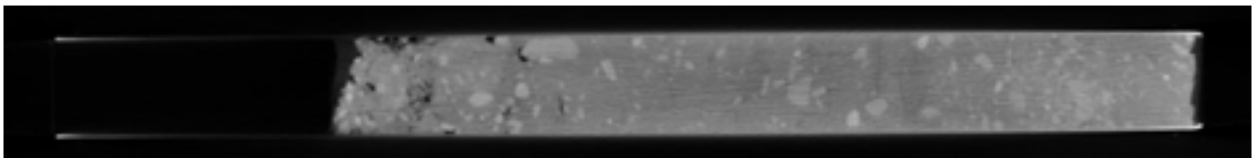
Depth: 3.3 to 4.0 m / El. 927.4 to 926.7 m

INFERRED UPPER TILL

MR14-103 – Sa 2

Depth: 4.7 to 5.3 m / El. 926 to 925.4 m

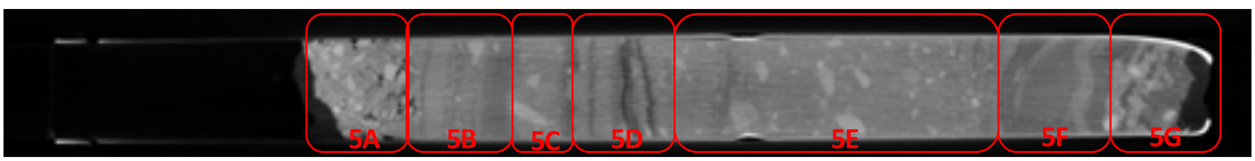
INFERRED UPPER TILL



MR14-103 – Sa 4

Depth: 6.9 to 7.5 m / El. 923.8 to 923.2 m

INFERRED UPPER TILL



MR14-103 – Sa 5

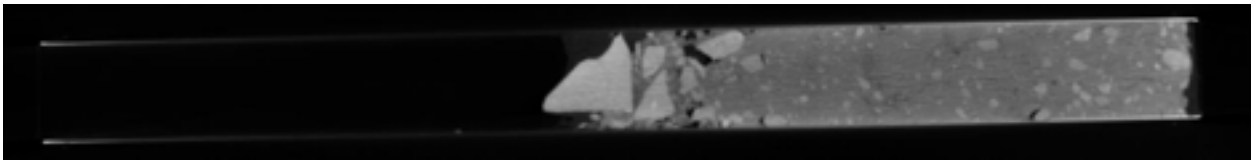
Depth: 7.8 to 8.3 m / El. 922.9 to 922.4 m

INFERRED POSSIBLE UPPER GLACIOLACUSTRINE WITH UPPER TILL INCLUSIONS

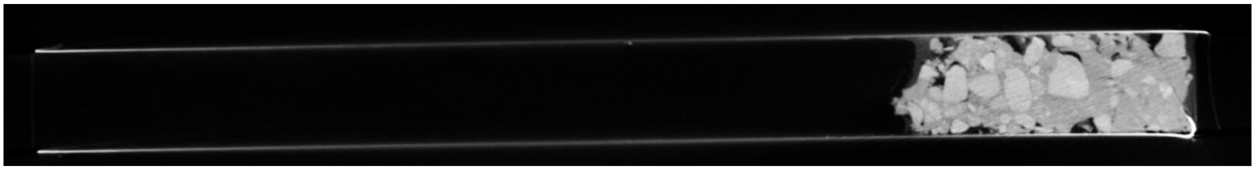
MR14-103 – Sa 6

Depth: 8.6 to 8.7 m / El. 922.1 to 922 m

INFERRED LOWER TILLS (BASAL TILL)

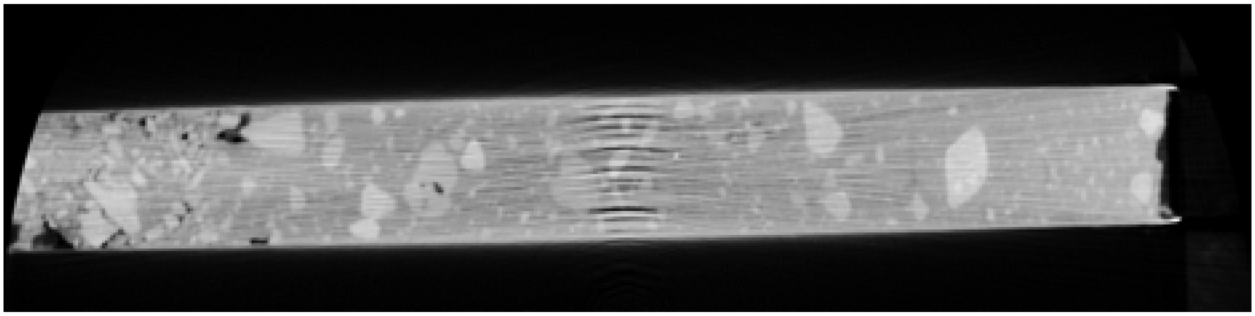


MR14-104 – Sa 1
Depth: 3.6 to 4.1 m / El. 928.1 to 927.6 m
INFERRED UPPER TILL

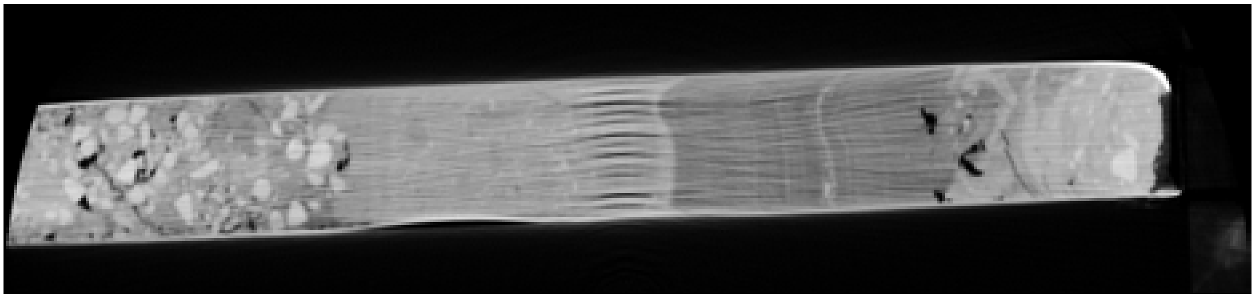


MR14-104 – Sa 2
Depth: 4.5 to 4.7 m / El. 927.2 to 927 m
INFERRED UPPER TILL

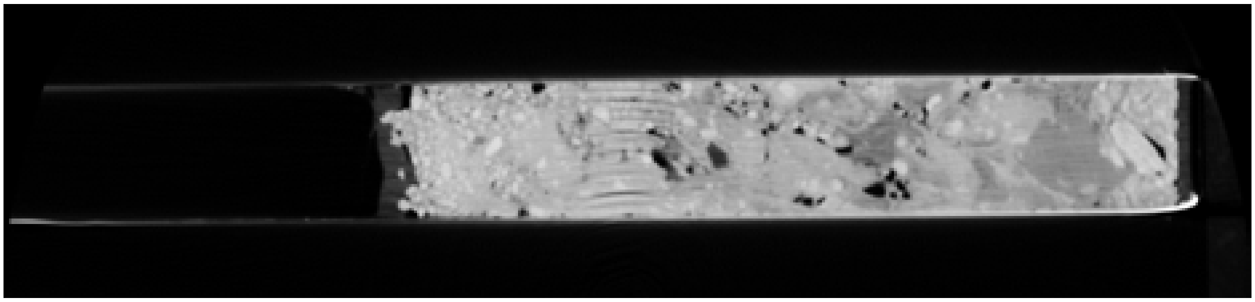
MR14-104 – Sa 4
Depth: 6.0 to 6.5 m / El. 925.7 to 925.2 m
INFERRED UPPER TILL



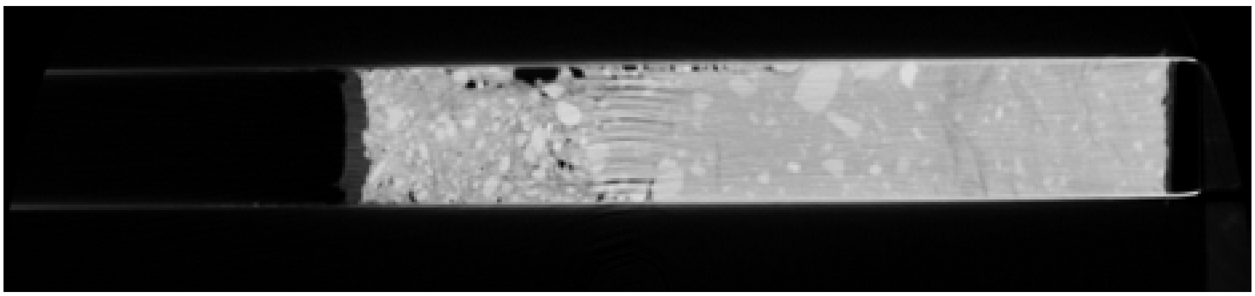
MR14-104 – Sa 5
Depth: 7.8 to 8.5 m / El. 923.9 to 923.2 m
INFERRED UPPER TILL



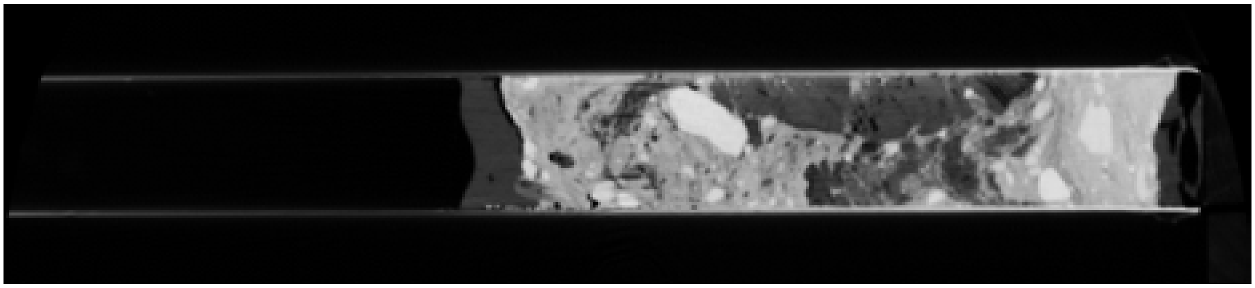
MR14-104 – Sa 7
Depth: 10.6 to 11.2 m / El. 921.1 to 920.5 m
INFERRED POSSIBLE UPPER GLACIOLUCUSTRINE WITHIN UPPER TILL



MR14-104 – Sa 8
Depth: 11.4 to 12.0 m / El. 920.3 to 919.7 m
INFERRED UPPER TILL



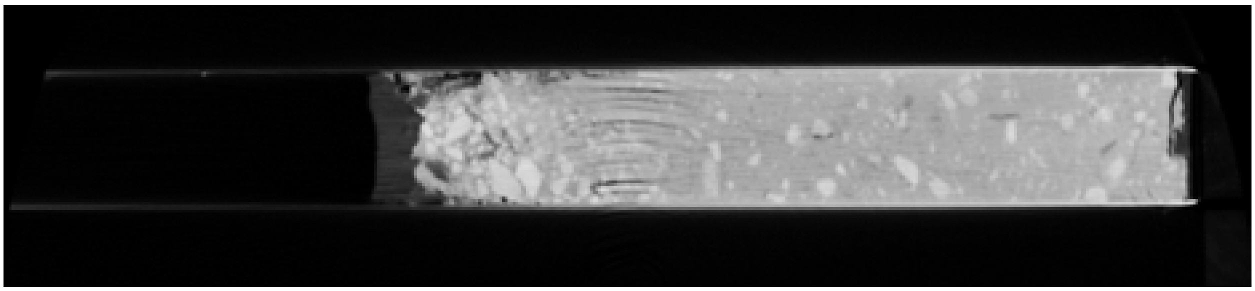
MR14-104 – Sa 9
Depth: 12.2 to 12.7 m / El. 919.5 to 919 m
INFERRED UPPER TILL



MR14-105 – Sa 2

Depth: 2.3 to 2.7 m / El. 929.4 to 929.0 m

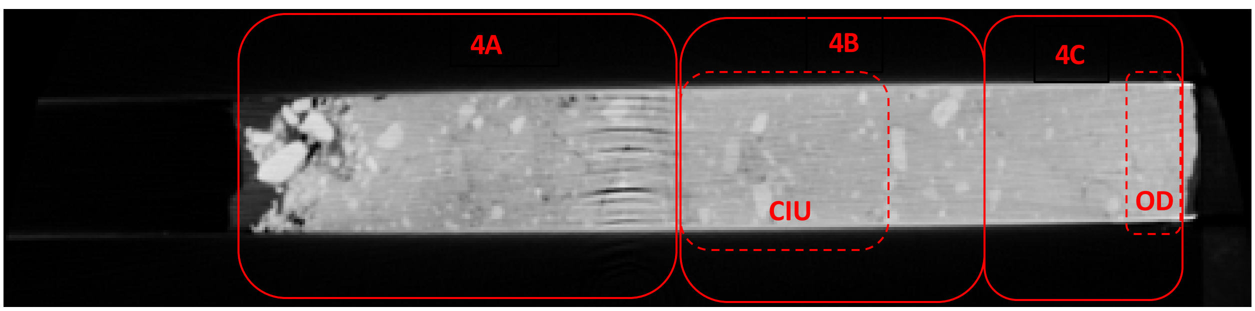
INFERRED UPPER TILL OR POSSIBLE STRIPPING MATERIAL



MR 14-105 – Sa 3

Depth: 3.0 to 3.7 m / El. 928.7 to 928.0 m

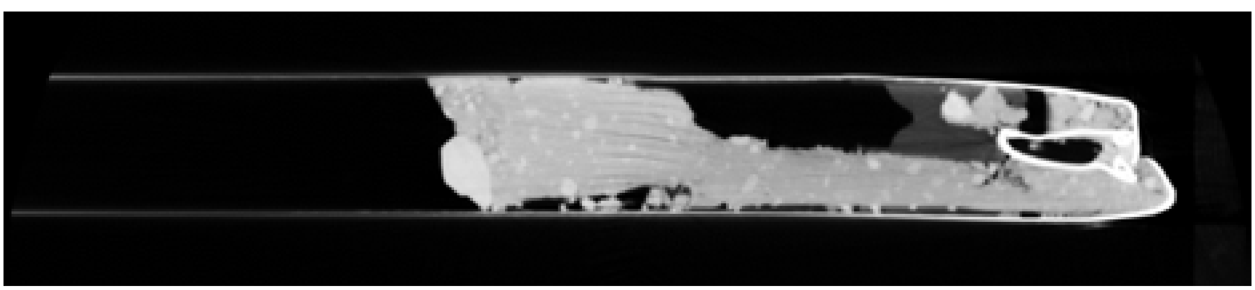
INFERRED UPPER TILL



MR14-105 – Sa 4

Depth: 3.7 to 4.3 m / El. 927.9 to 927.3 m

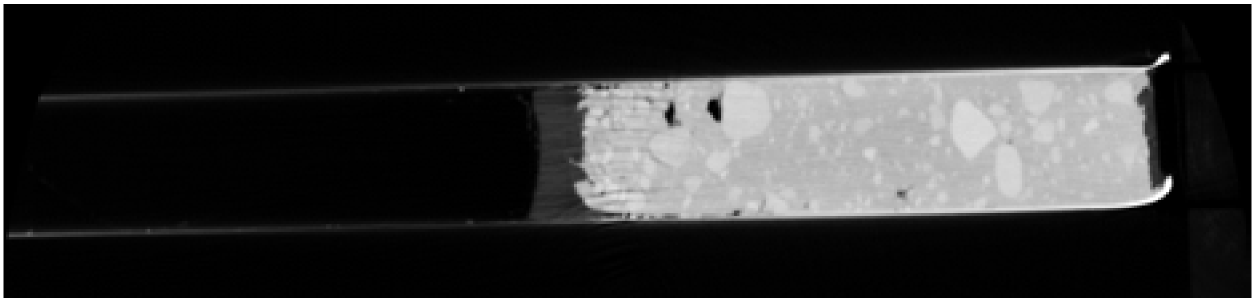
INFERRED UPPER TILL



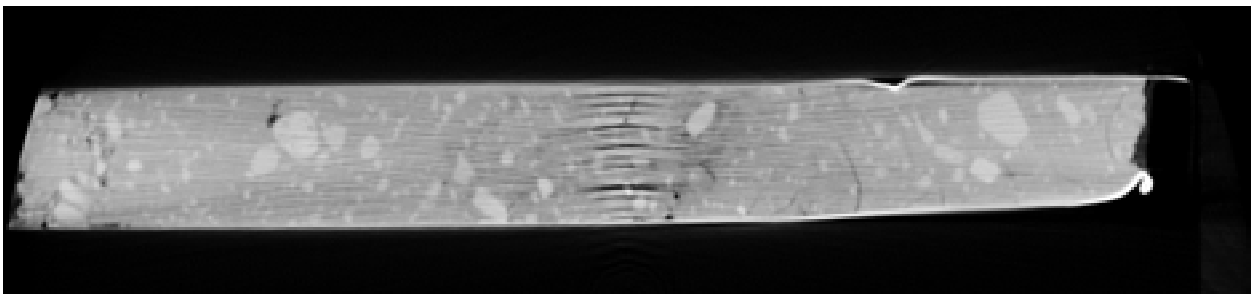
MR14-105 – Sa 5

Depth: 4.9 to 5.3 m / El. 926.7 to 926.3 m

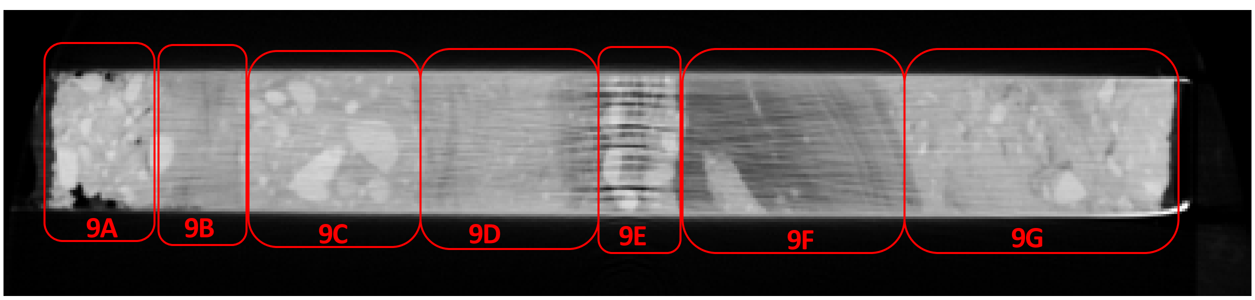
INFERRED UPPER TILL



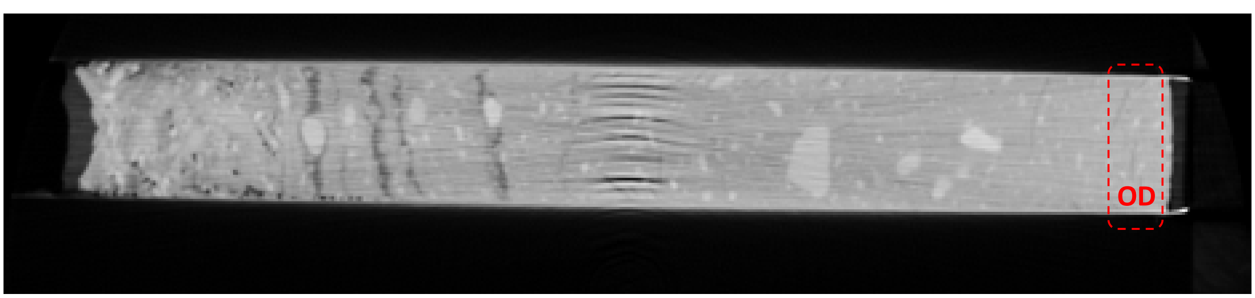
MR14-105 – Sa 7
Depth: 6.9 to 7.5 m / El. 924.7 to 924.1 m
INFERRED UPPER TILL



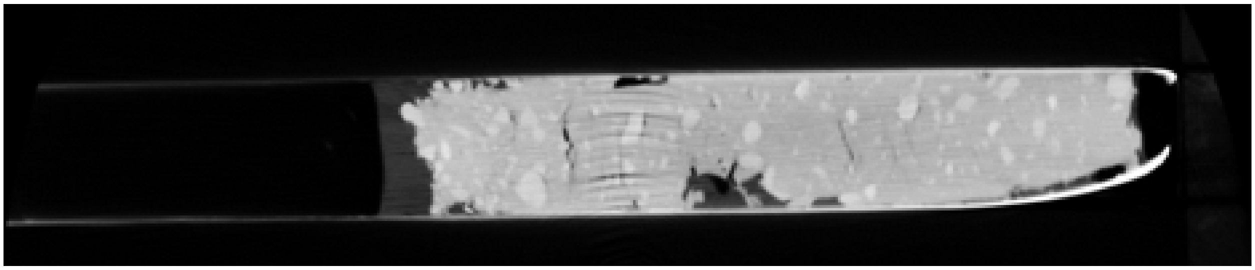
MR14-105 – Sa 8
Depth: 7.9 to 8.5 m / El. 923.7 to 923.1 m
INFERRED UPPER TILL



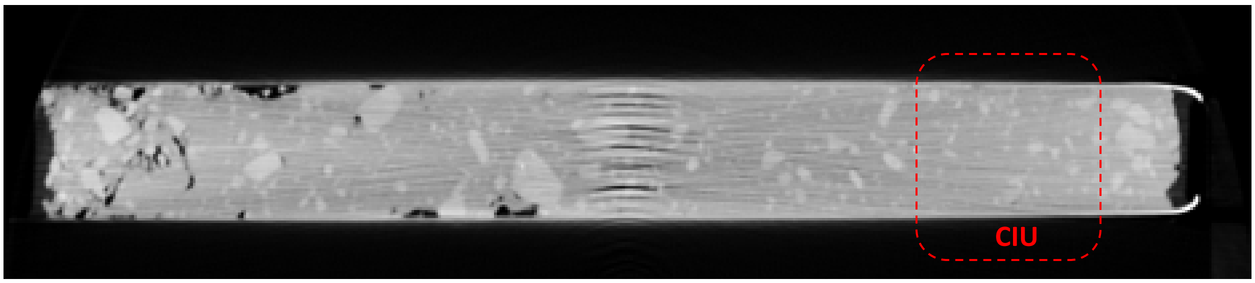
MR14-105 – Sa 9
Depth: 9.1 to 9.8 m / El. 922.5 to 921.9 m
INFERRED UPPER GLACIOLACUSTRINE WITHIN UPPER TILL



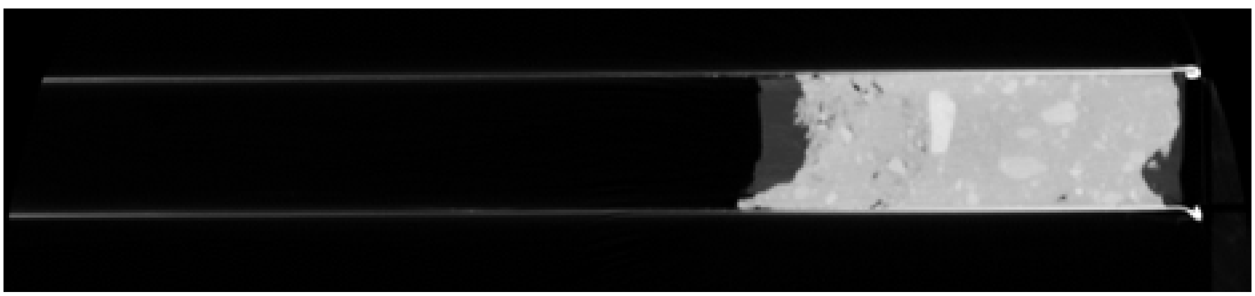
MR14-105 – Sa 10
Depth: 10.7 to 11.3 m / El. 920.9 to 920.3 m
INFERRED UPPER TILL



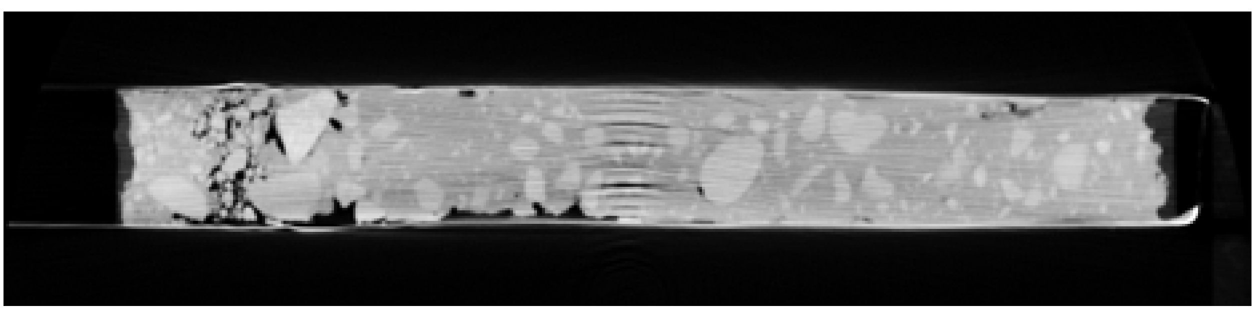
MR14-106 – Sa 1
Depth: 3.0 to 3.7 m / El. 926.4 to 925.7 m
INFERRED UPPER TILL



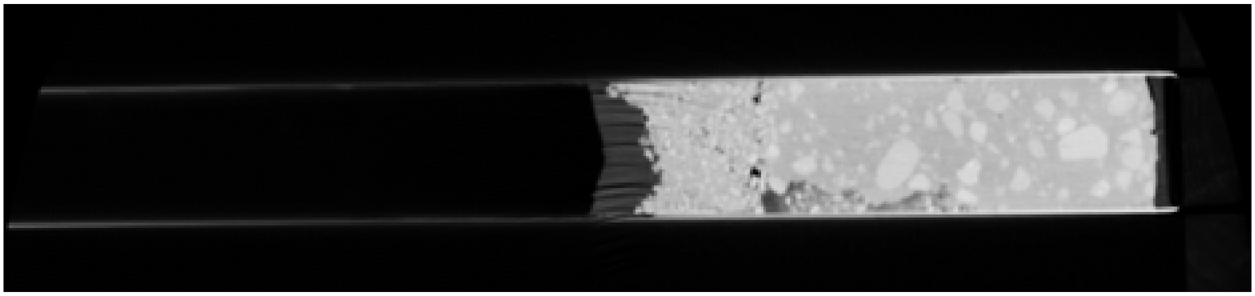
MR14-106 – Sa 2
Depth: 4.3 to 4.9 m / El. 925.0 to 924.4 m
INFERRED UPPER TILL



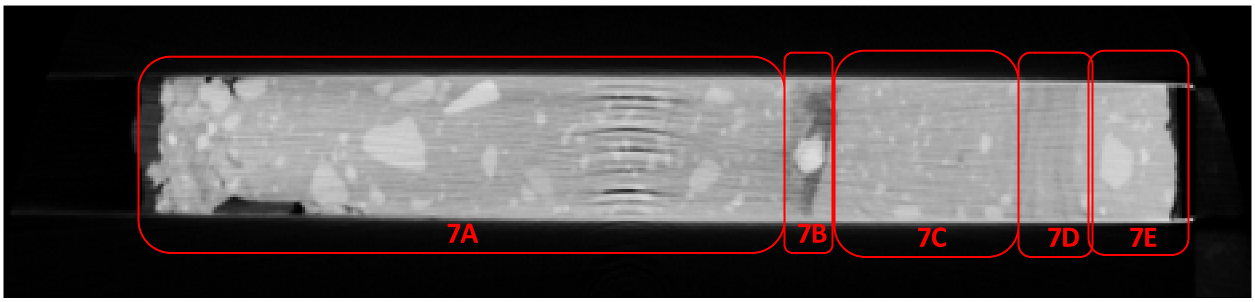
MR14-106 – Sa 3
Depth: 5.2 to 5.4 m / El. 924.1 to 923.9 m
INFERRED UPPER TILL



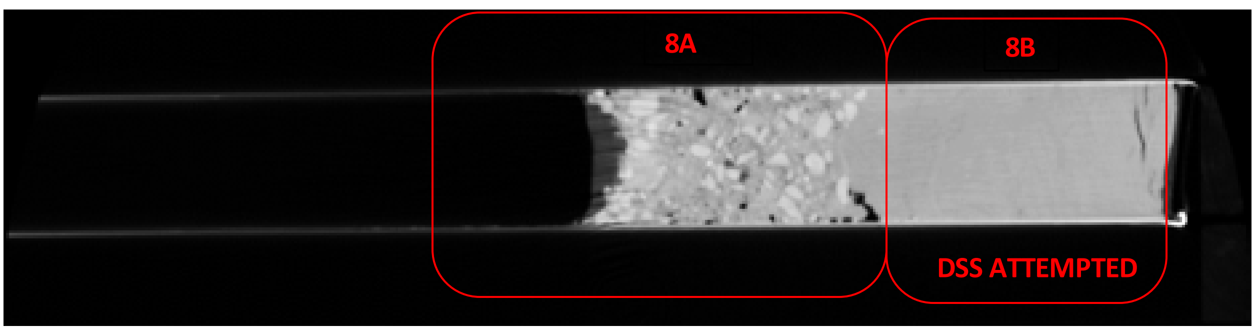
MR14-106 – Sa 4
Depth: 5.7 to 6.3 m / El. 923.6 to 923.0 m
INFERRED UPPER TILL



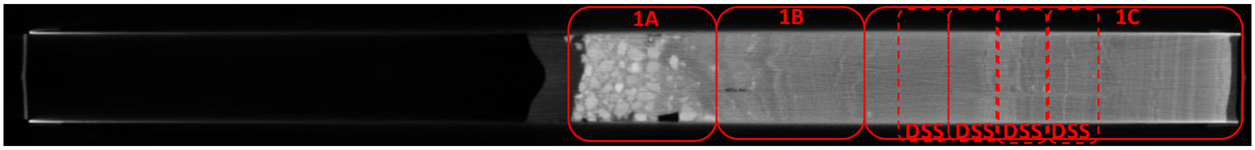
MR14-106 – Sa 5
Depth: 6.6 to 7.3 m / El. 922.7 to 922.0 m
INFERRED UPPER TILL



MR14-106 – Sa 7
Depth: 8.5 to 9.1 m / El. 920.8 to 920.2 m
INFERRED LOWER TILLS (BASAL TILL)



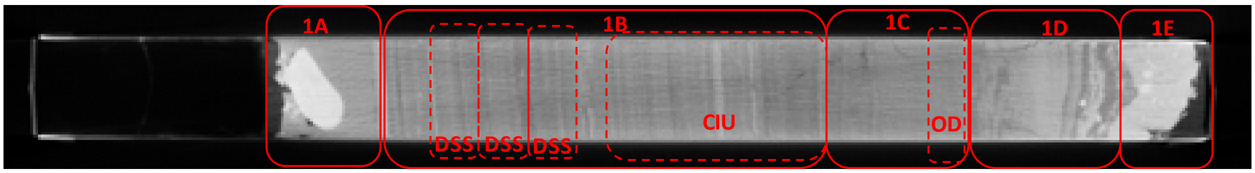
MR14-106 – Sa 8
Depth: 10.3 to 10.6 m / El. 919.0 to 918.7 m
INFERRED LOWER TILLS (BASAL TILL OVER LOWER GLACIOLACUSTRINE)
DSS TEST ATTEMPTED ON 8B BUT VOID PREVENTED TESTING



MR14-106A – Sa 1

Depth: 7.3 to 8.1 m / El. 921.4 to 920.6 m

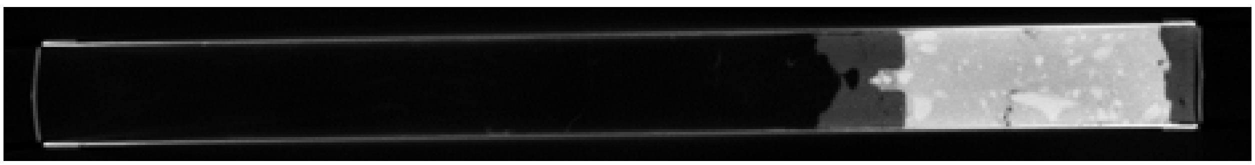
INFERRED UPPER GLACIOLACUSTRINE



MR14-106C – Sa 1

Depth: 7.2 to 7.8 m / El. 921.3 to 920.7 m

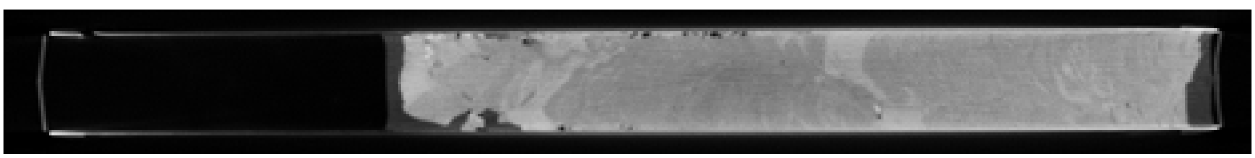
INFERRED GLACIOLACUSTRINE OVER LOWER TILL



MR14-106C – Sa 2

Depth: 7.8 to 8.4 m / El. 920.7 to 920.1 m

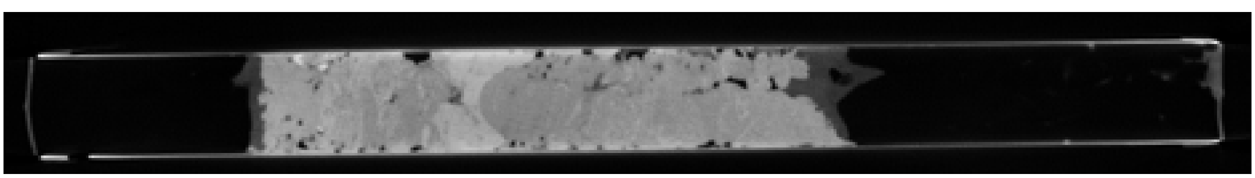
INFERRED LOWER TILL



MR14-106D – Sa 1

Depth: 7.6 to 8.2 m / El. 921.1 to 920.5 m

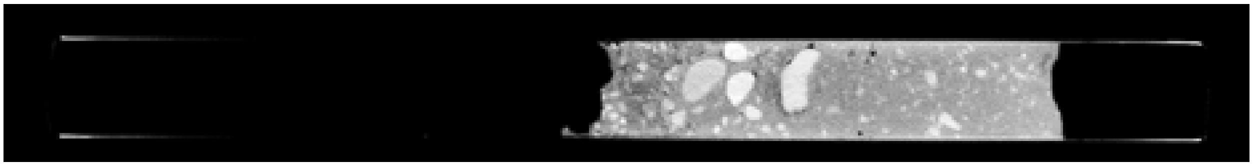
INFERRED UPPER GLACIOLACUSTRINE – NOTE FOLDING



MR14-106D – Sa 2

Depth: 8.2 to 8.8 m / El. 920.5 to 919.9 m

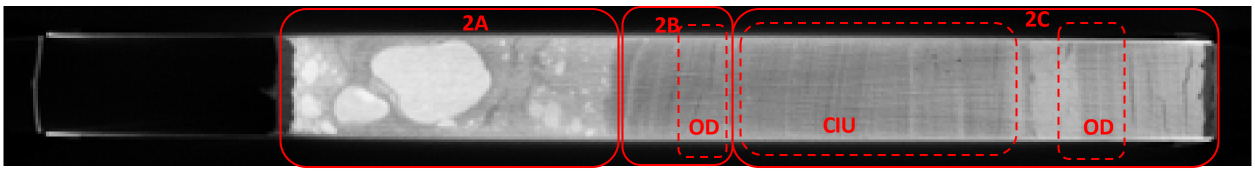
INFERRED UPPER GLACIOLACUSTRINE



MR14-106E – Sa 1

Depth: 7.1 to 7.6 m / El. 921.9 to 921.4 m

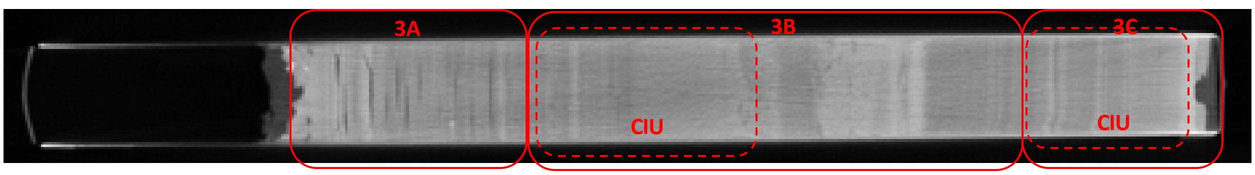
INFERRED UPPER TILL



MR14-106E – Sa 2

Depth: 7.6 to 8.2 m / El. 921.4 to 920.8 m

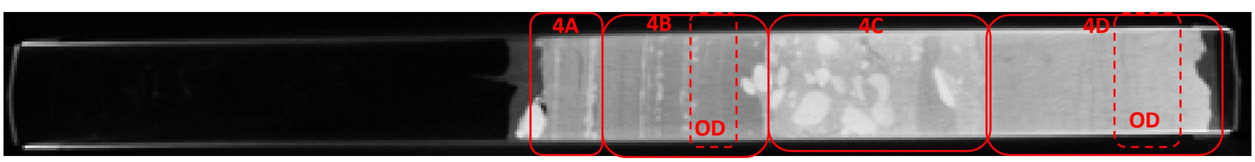
INFERRED UPPER TILL OVER UPPER GLACIOLACUSTRINE



MR14-106E – Sa 3

Depth: 8.2 to 8.8 m / El. 920.8 to 920.2 m

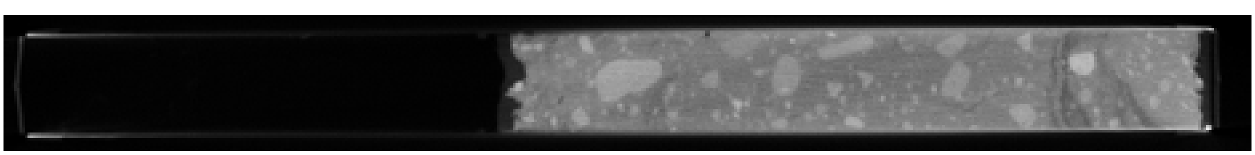
INFERRED UPPER GLACIOLACUSTRINE



MR14-106E – Sa 4

Depth: 8.8 to 9.4 m / El. 920.2 to 919.6 m

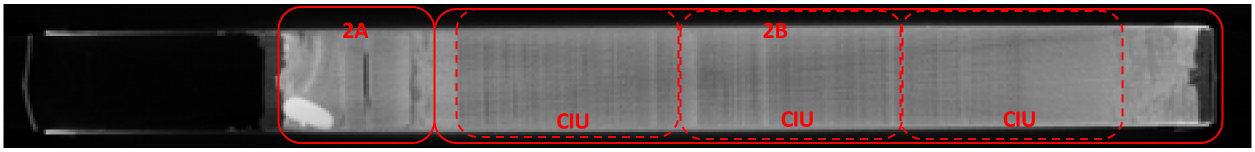
INFERRED UPPER GLACIOLACUSTRINE TRANSITIONING TO LOWER TILLS



MR14-106F – Sa 1

Depth: 7.0 to 7.6 m / El. 921.7 to 921.1 m

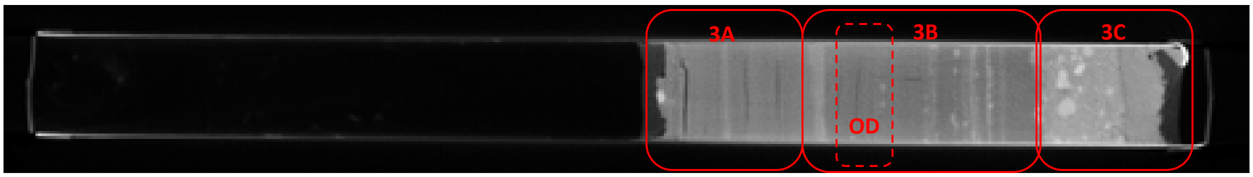
INFERRED UPPER TILL



MR14-106F – Sa 2

Depth: 7.8 to 8.4 m / El. 920.9 to 920.3 m

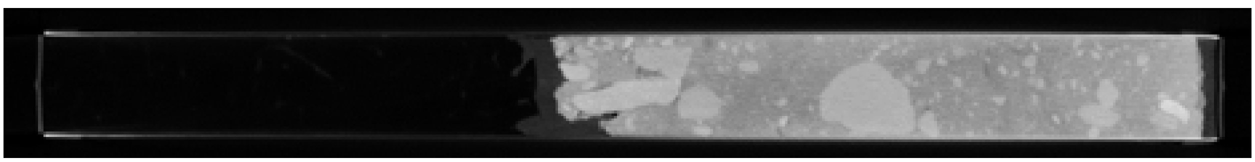
INFERRED UPPER GLACIOLACUSTRINE



MR14-106F – Sa 3

Depth: 8.4 to 8.8 m / El. 920.3 to 919.9 m

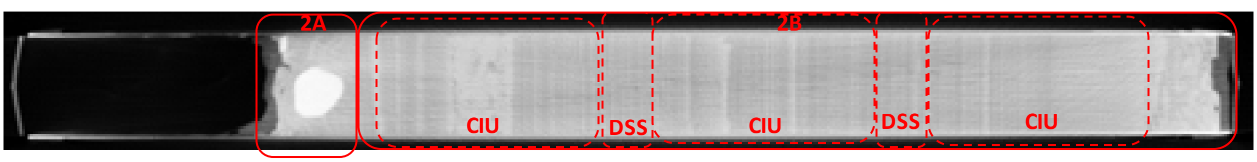
INFERRED UPPER GLACIOLACUSTRINE OVER LOWER TILLS (BASAL)



MR14-106G – Sa 1

Depth: 7.0 to 7.6 m / El. 921.7 to 921. m

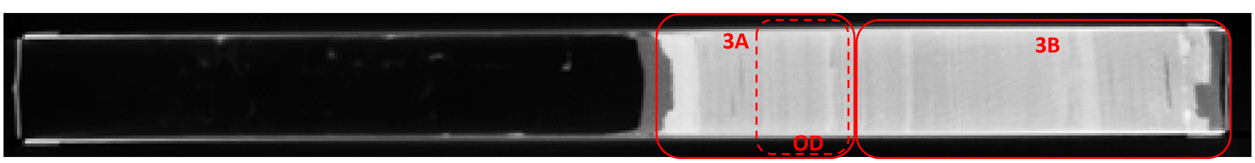
INFERRED UPPER TILL



MR14-106G – Sa 2

Depth: 7.6 to 8.2 m / El. 921.1 to 920.5 m

INFERRED UPPER GLACIOLACUSTRINE



MR14-106G – Sa 3

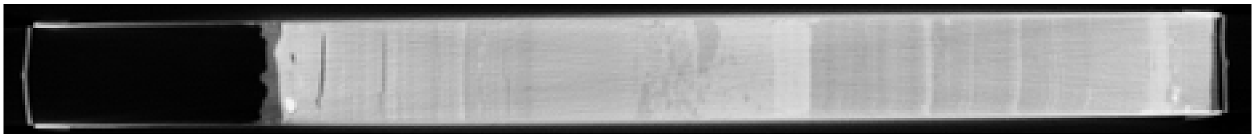
Depth: 8.2 to 8.6 m / El. 920.5 to 920.1 m

INFERRED UPPPER GLACIOLACUSTRINE

MR14-106H – Sa 1

Depth: 7.3 to 7.9 m / El. 921.3 to 920.7 m

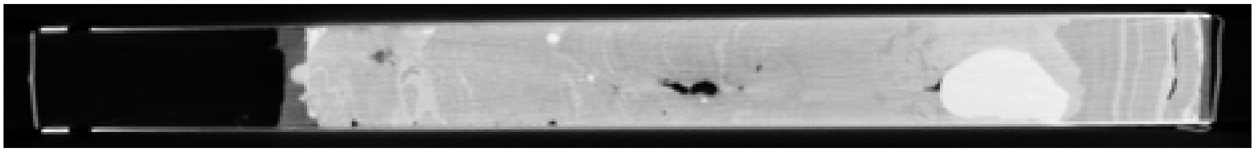
INFERRED UPPER TILL OVER UPPER GLACIOLACUSTRINE



MR14-106H – Sa 2

Depth: 7.9 to 8.5 m / El. 920.7 to 920.1 m

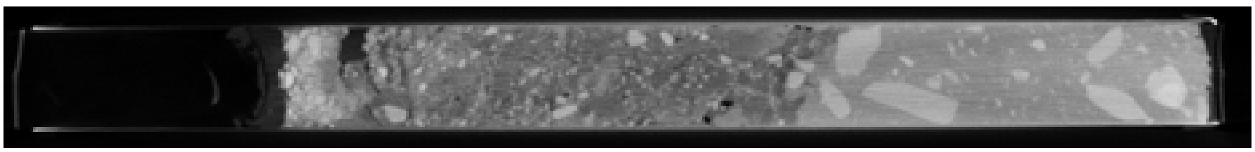
INFERRED UPPER GLACIOLACUSTRINE



MR14-106I – Sa 1

Depth: 7.3 to 7.9 m / El. 921.3 to 920.7 m

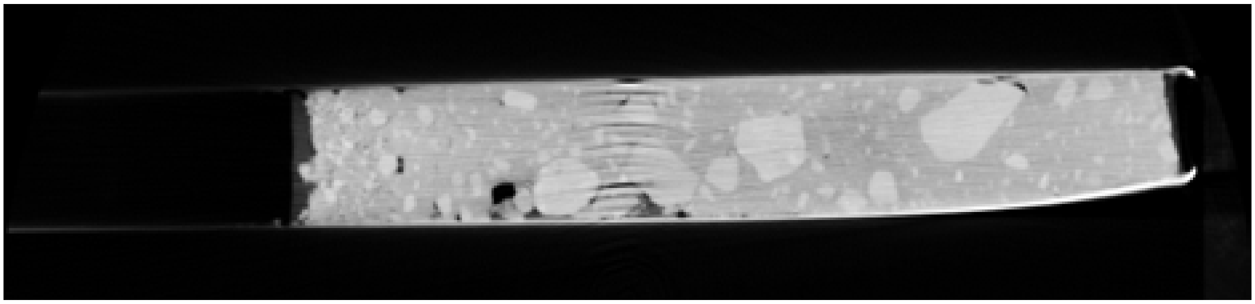
INFERRED UPPER GLACIOLACUSTRINE - NOTE FOLDING



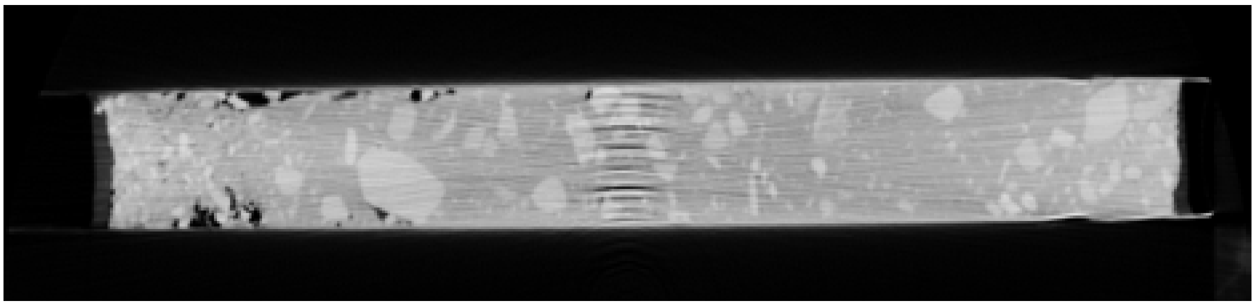
MR14-106I – Sa 2

Depth: 7.9 to 8.5 m / El. 920.7 to 920.1 m

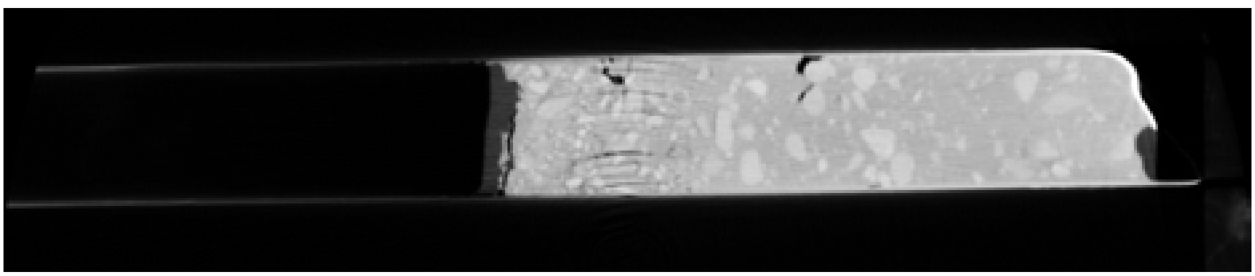
INFERRED LOWER TILLS (BASAL)



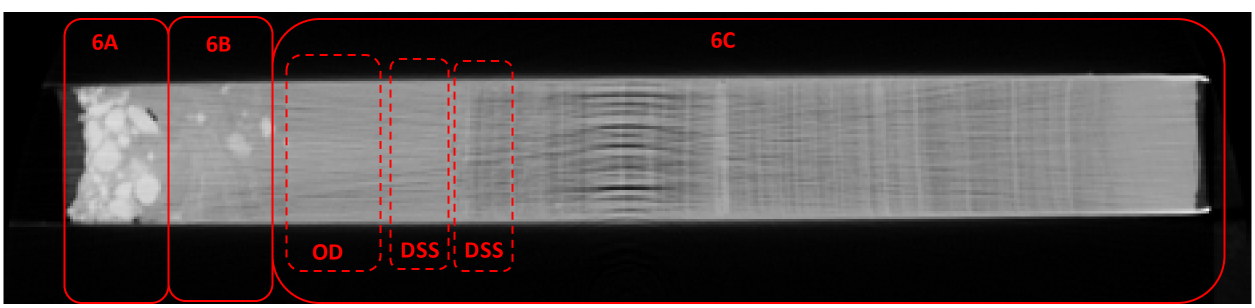
MR14-107 – Sa 1
Depth: 2.7 to 3.1 m / El. 926.0 to 925.6 m
INFERRED UPPER TILL



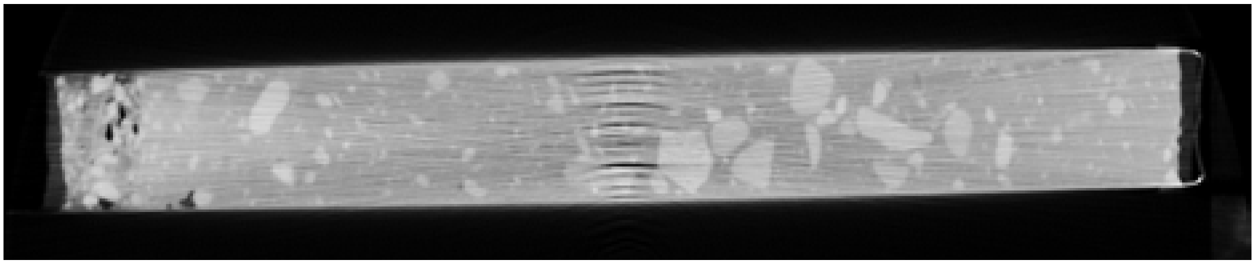
MR14-107 – Sa 4
Depth: 4.6 to 5.2 m / El. 924.1 to 923.5 m
INFERRED UPPER TILL



MR14-107 – Sa 5
Depth: 6.1 to 6.7 m / El. 922.6 to 922 m
INFERRED UPPER TILL



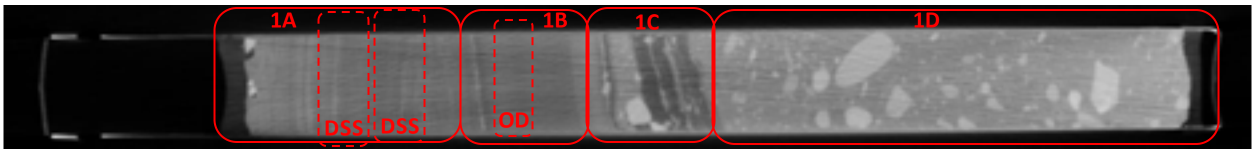
MR14-107 – Sa 6
Depth: 6.9 to 7.6 m / El. 921.8 to 921.1 m
INFERRED UPPER TILL OVER UPPER GLU



MR14-107 – Sa 7

Depth: 7.9 to 8.5 m / El. 920.8 to 920.2 m

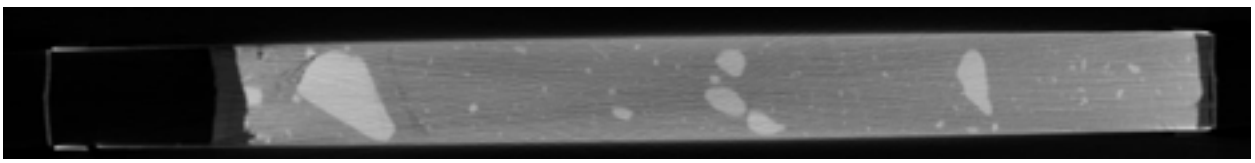
INFERRED LOWER TILLS (BASAL TILL)



MR14-107A – Sa 1

Depth: 7.2 to 7.8 m / El. 921.1 to 920.5 m

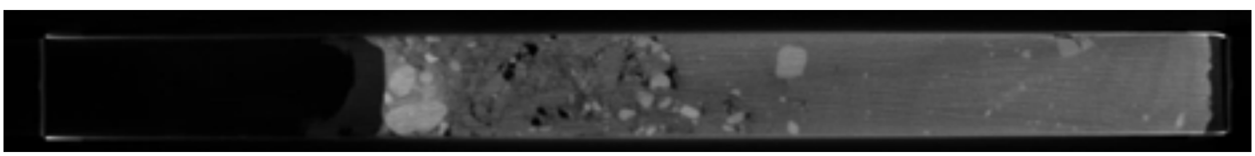
INFERRED UPPER GLU



MR14-107A – Sa 3

Depth: 9.3 to 9.9 m / El. 919.0 to 918.4 m

INFERRED LOWER TILLS (BASAL TILL)



MR14-107A – Sa 4

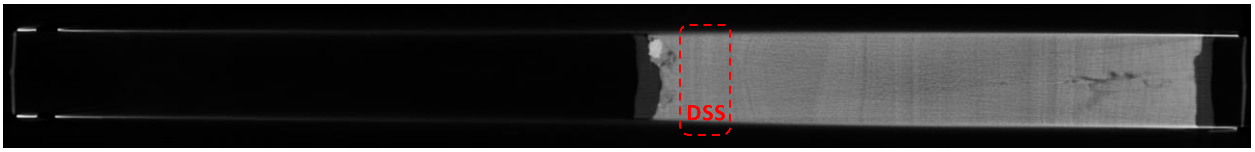
Depth: 10.1 to 10.5 m / El. 918.2 to 917.8 m

INFERRED LOWER TILLS (BASAL TILL OVER LOWER GLU)

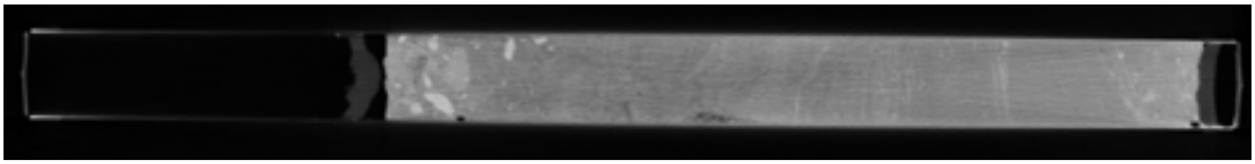
MR14-107A – Sa 6

Depth: 11.4 to 11.7 m / El. 916.9 to 916.6 m

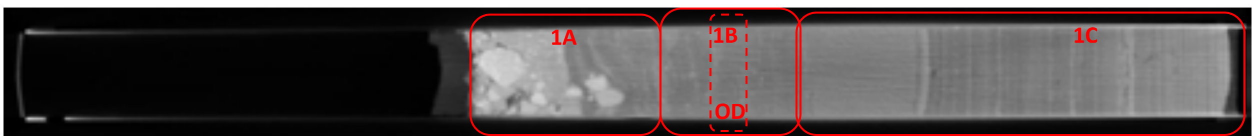
INFERRED LOWER TILLS (BASAL TILL OVER LOWER GLU)



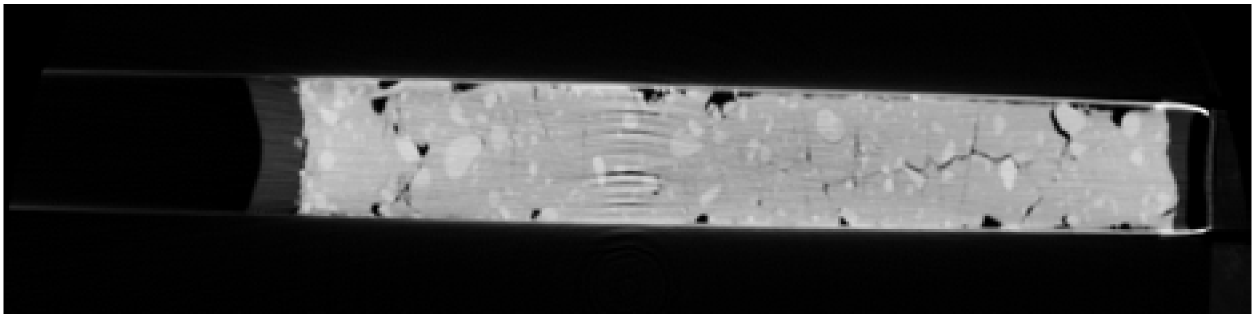
MR14-107A – Sa 7
Depth: 11.9 to 12.1 m / El. 916.4 to 916.2 m
INFERRED LOWER TILLS (LOWER GLU)



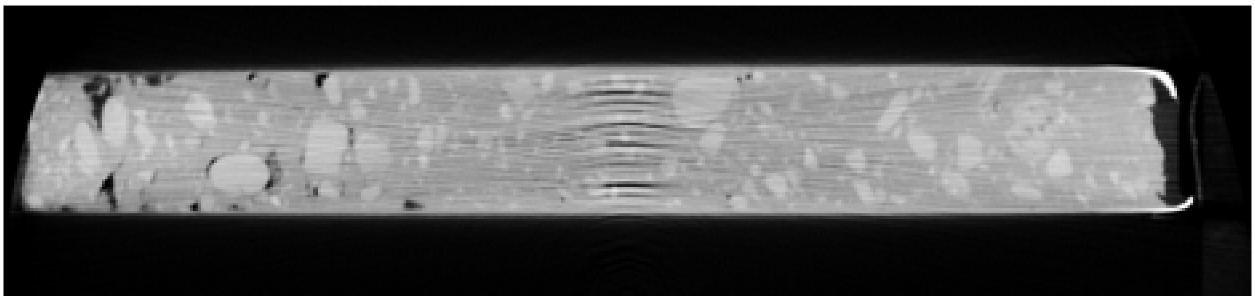
MR14-107A – Sa 8
Depth: 12.3 to 12.9 / El. 916.0 to 915.4 m
INFERRED LOWER TILLS (LOWER GLU)



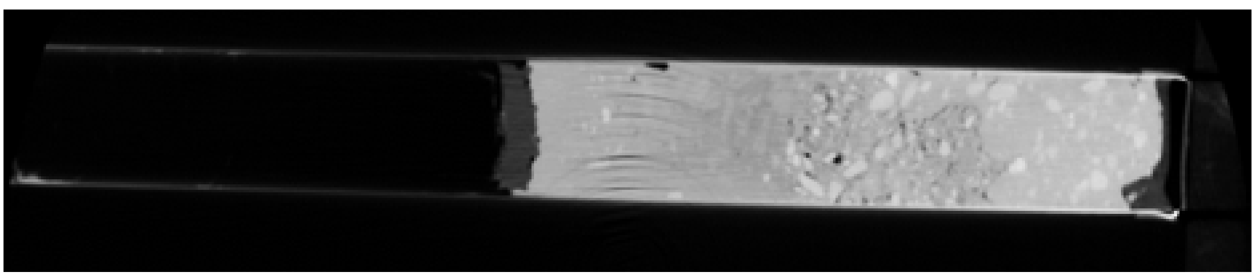
MR14-107B – Sa 1
Depth: 6.6 to 7.3 m / El. 921.8 to 921.1 m
INFERRED UPPER TILL OVER UPPER GLU



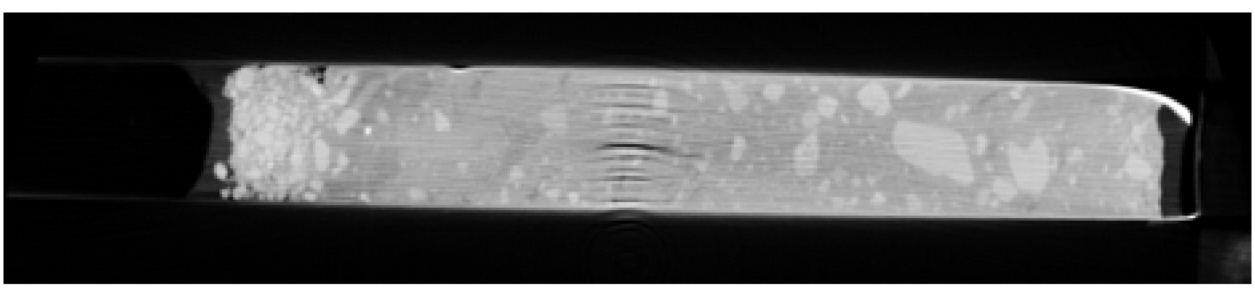
MR14-108 – Sa 1
Depth: 1.5 to 2.0 m / El. 927.1 to 926.6 m
INFERRED UPPER TILL



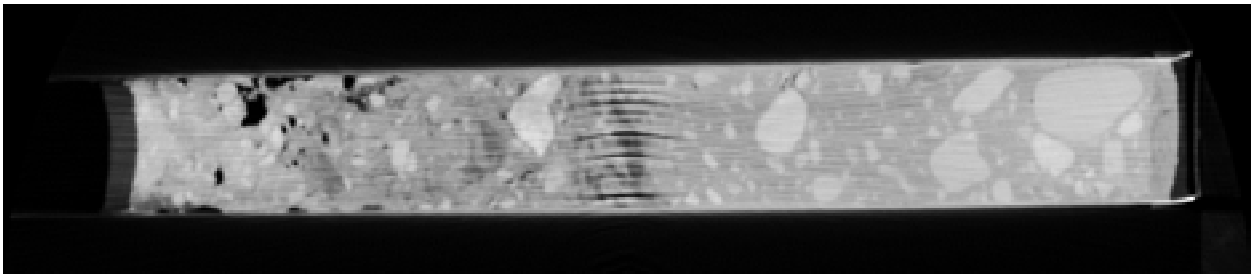
MR14-108 – Sa 2
Depth: 2.7 to 3.4 m / El. 925.9 to 925.2 m
INFERRED UPPER TILL



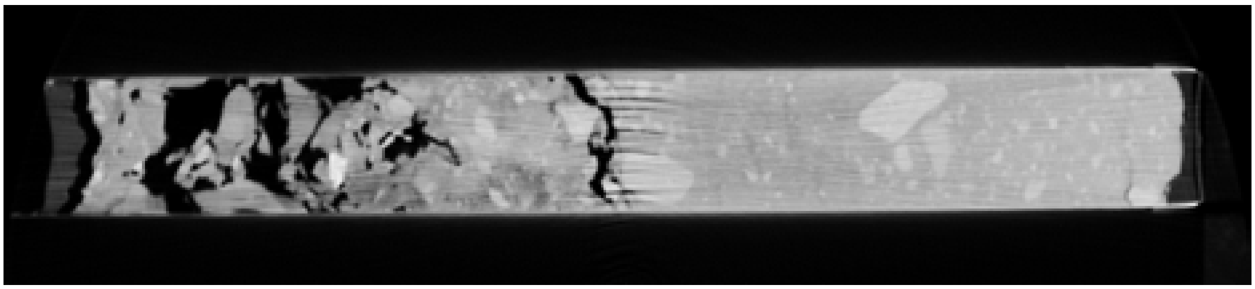
MR14-108 – Sa 3
Depth: 3.5 to 3.9 m / El. 925.1 to 924.7 m
INFERRED UPPER TILL



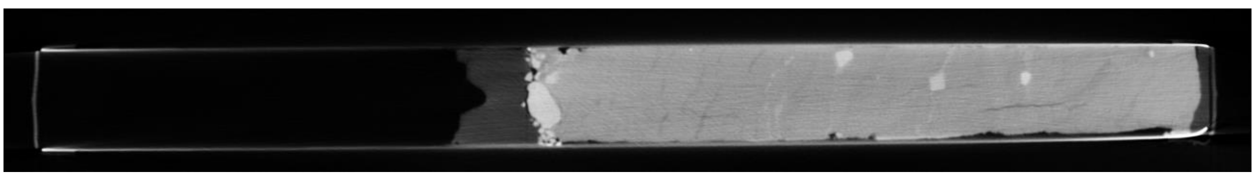
MR14-108 – Sa 7
Depth: 4.6 to 5.2 m / El. 924.0 to 923.4 m
INFERRED UPPER TILL



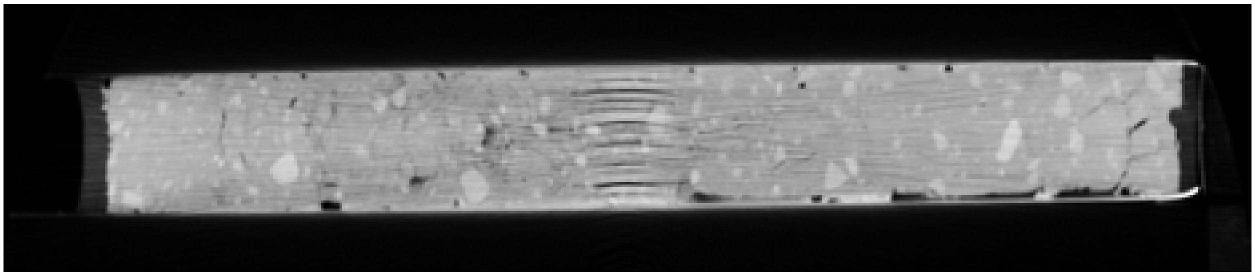
MR14-108 – Sa 4
Depth: 5.5 to 6.1 m / El. 923.1 to 922.5 m
INFERRED UPPER TILL



MR14-108 – Sa 5
Depth: 6.4 to 7.0 m / El. 922.2 to 921.6 m
INFERRED UPPER TILL



MR14-108A – Sa 6
Depth: 11.4 to 11.8 m / El. 917.2 to 916.8 m
INFERRED LOWER TILLS (LOWER GLU)



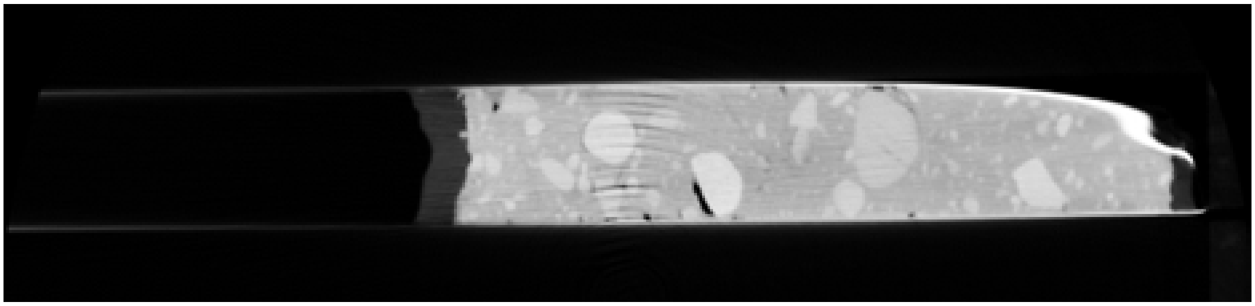
MR14-109 – Sa 1

Depth: 1.2 to 1.8 m / El. 927.8 to 927.2 m

INFERRED UPPER TILL

THIS SAMPLE TO BE EXTRUDED OCT 28 FOR COMPARISON/CALIBRATION TO CT SCAN RESULTS

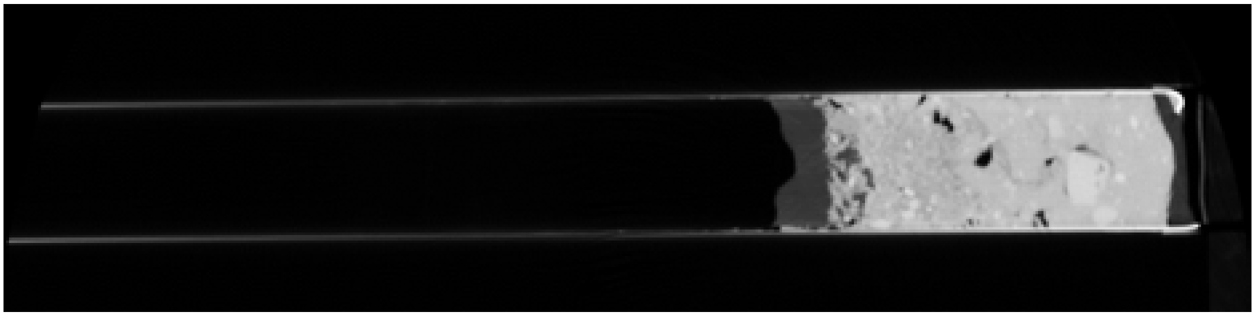
CT SCAN PROVIDES ACCURATE REPRESENTATION OF SOIL FABRIC AND GRAVEL PARTICLES



MR14-109 – Sa 2

Depth: 2.4 to 3.0 m / El. 926.6 to 926.0 m

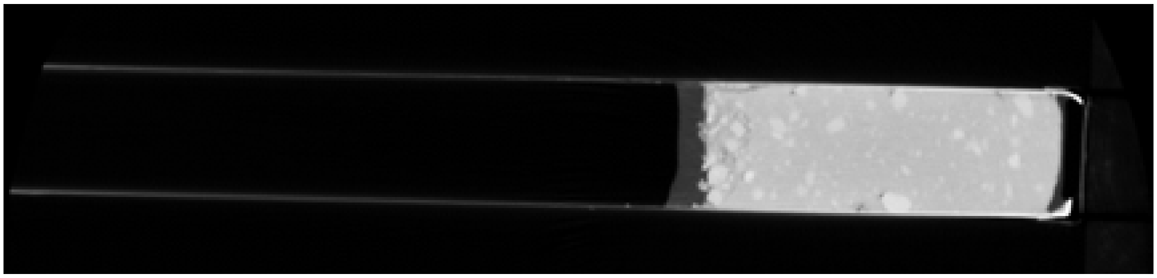
INFERRED UPPER TILL



MR14-109 – Sa 3

Depth: 3.4 to 4.0 m / El. 925.6 to 925.0 m

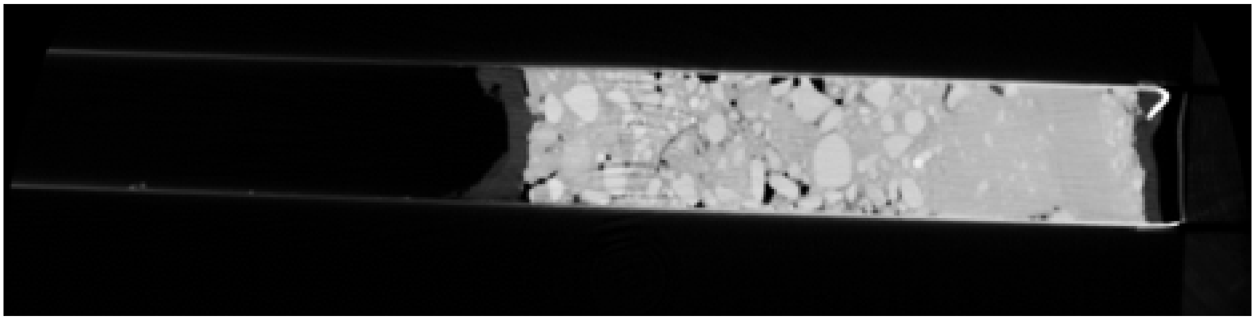
INFERRED UPPER TILL



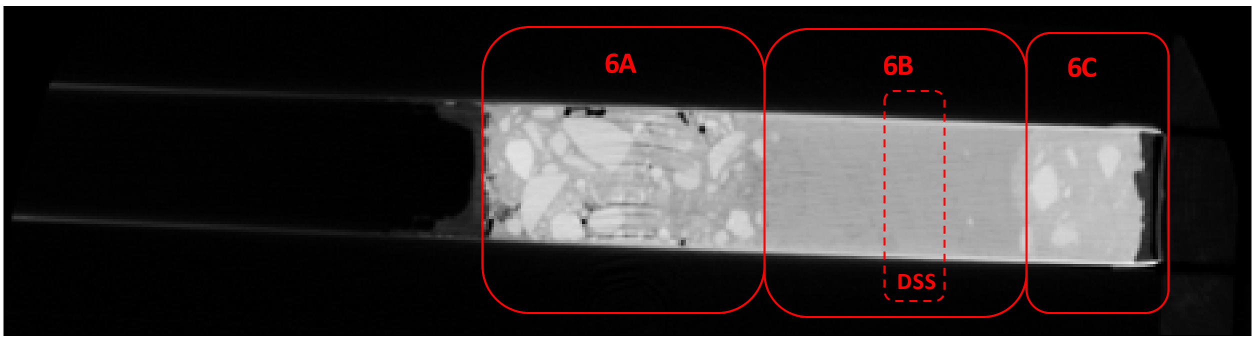
MR14-109 – Sa 4

Depth: 4.6 to 5.1 m / El. 924.4 to 923.9 m

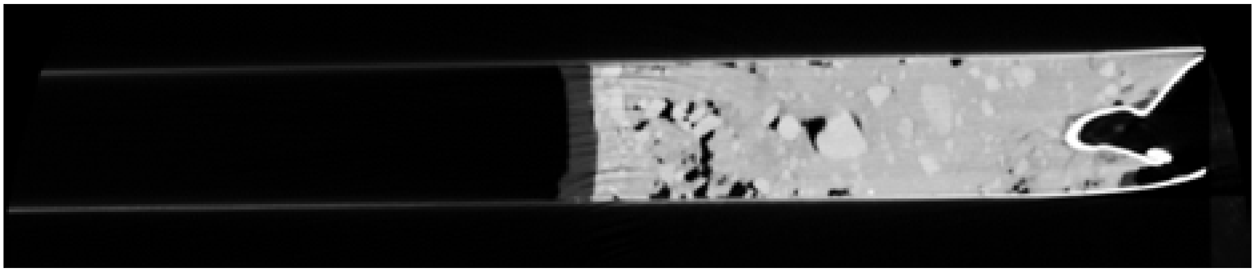
INFERRED UPPER TILL



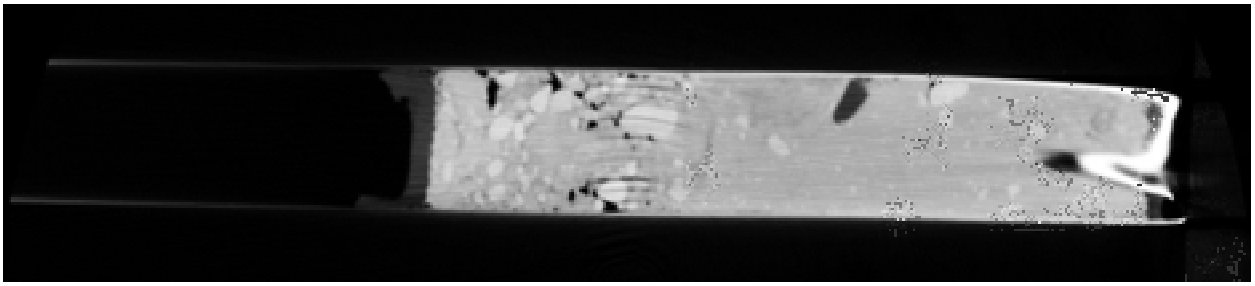
MR14-109 – Sa 5
Depth: 6.4 to 6.7 m / El. 922.6 to 922.3 m
INFERRED UPPER TILL



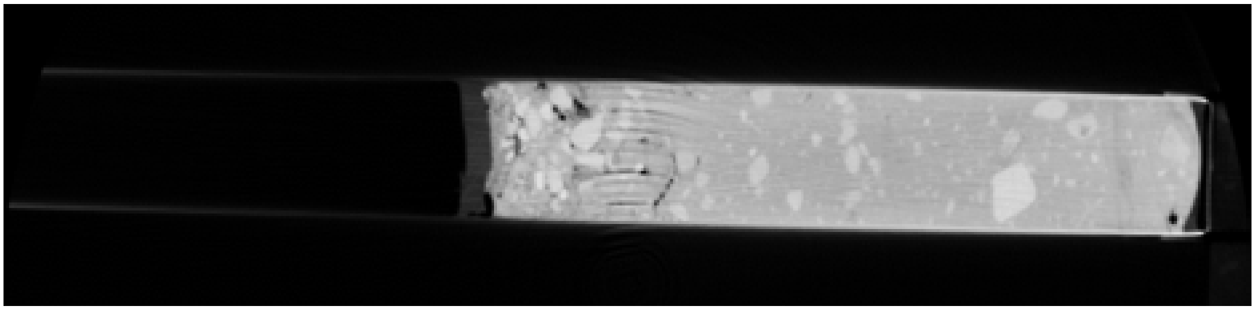
MR14-109 – Sa 6
Depth: 12.2 to 12.6 m / El. 916.8 to 916.4 m
INFERRED LOWER TILL (LOWER GLU)



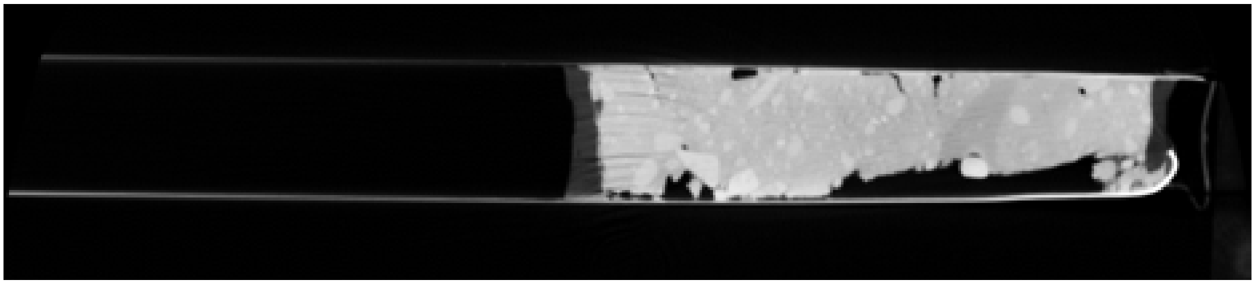
MR14-110 – Sa 1
Depth: 2.1 to 2.5 m / El. 926.6 to 926.2 m
INFERRED UPPER TILL



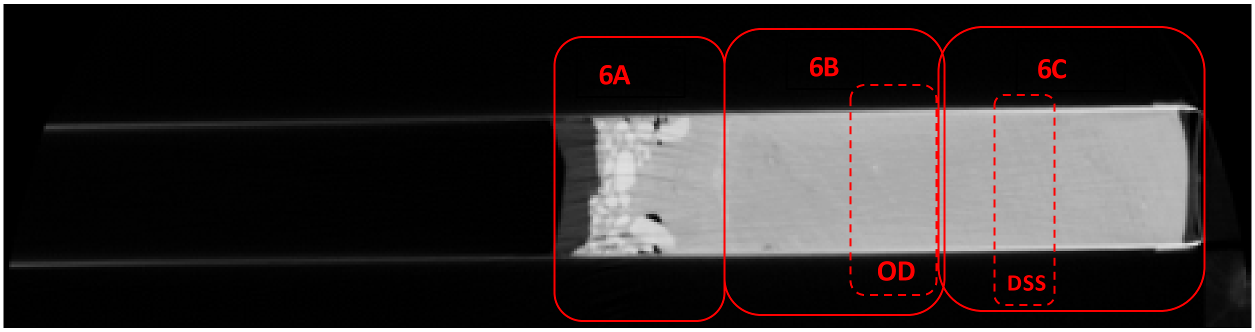
MR14-110 – Sa 2
Depth: 3.0 to 3.7 m / El. 925.7 to 925 m
INFERRED UPPER TILL



MR14-110 – Sa 4
Depth: 4.6 to 5.2 m / El. 924.1 to 923.5 m
INFERRED UPPER TILL



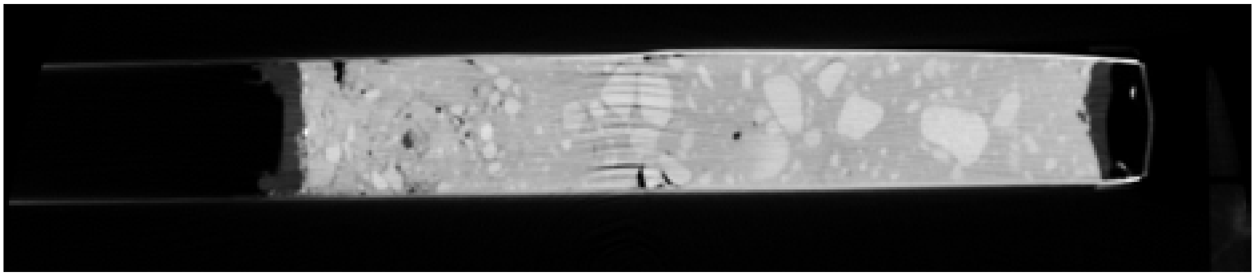
MR14-110 – Sa 5
Depth: 5.5 to 5.9 m / El. 923.2 to 922.8 m
INFERRED UPPER TILL



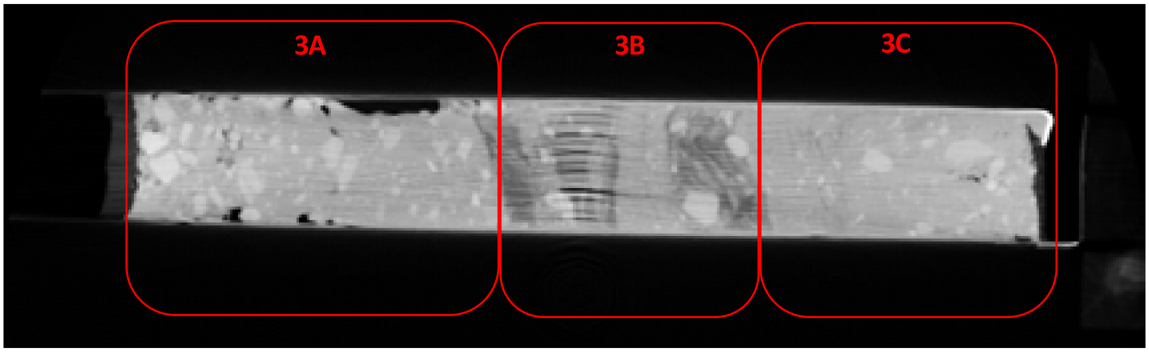
MR14-110 – Sa 6

Depth: 12.2 to 12.6 m / El. 916.5 to 916.1 m

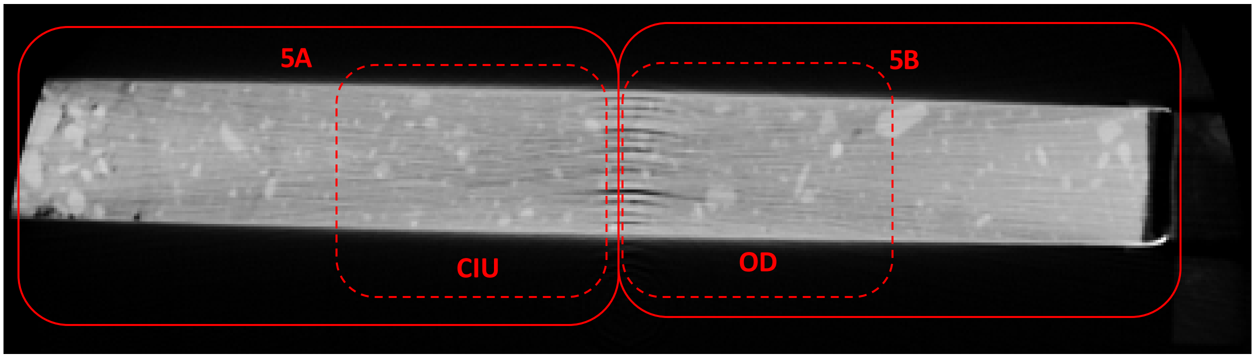
INFERRED LOWER TILLS (LOWER GLU)



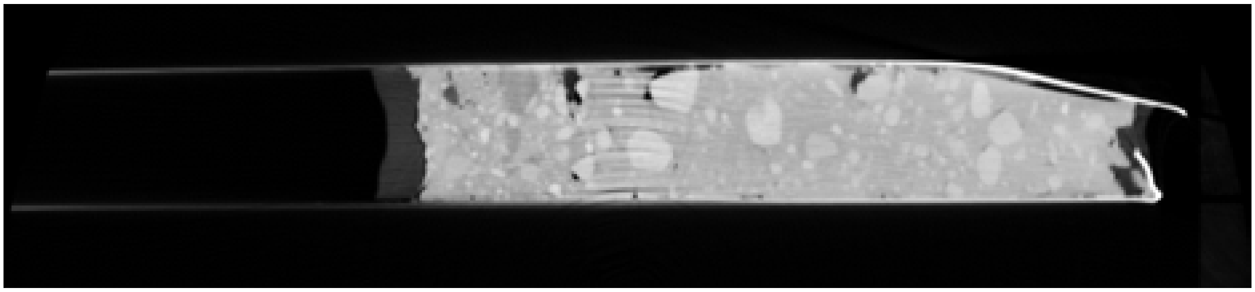
MR14-111 – Sa 1
Depth: 1.6 to 2.2 m / El. 927.0 to 926.4 m
INFERRED UPPER TILL



MR14-111 - Sa 3
Depth: 3.7 to 4.3 m / El. 924.9 to 924.3 m
INFERRED UPPER TILL – WITH UPPER GLU ZONE



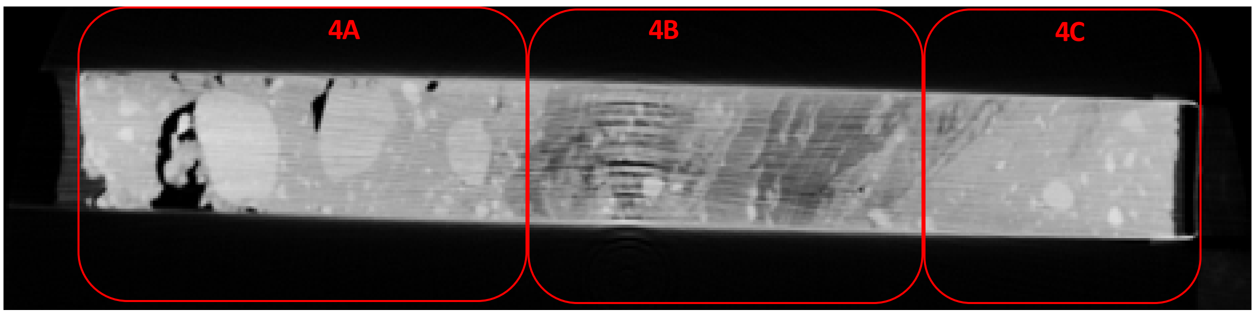
MR14-111 – Sa 5
Depth: 5.5 to 6.1 m / El. 923.1 to 922.8 m
INFERRED UPPER TILL



MR14-112 – Sa 1

Depth: 1.5 to 2.0 m / El. 927.4 to 926.9 m

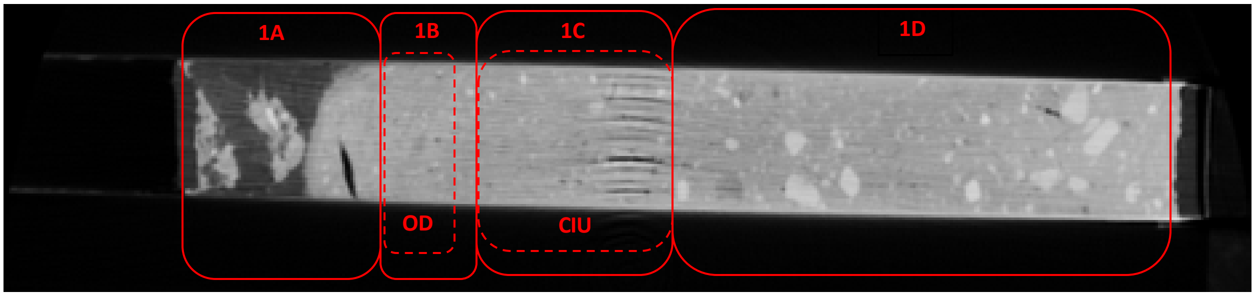
INFERRED UPPER TILL



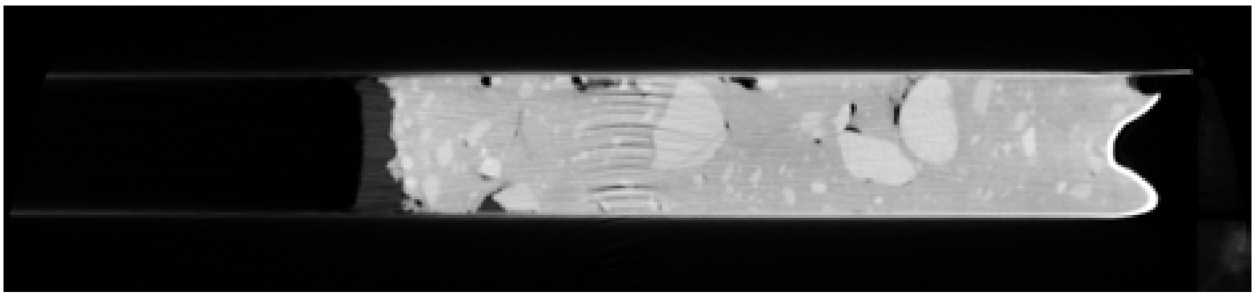
MR14-112 – Sa 4

Depth: 4.3 to 4.9 m / El. 924.6 to 924.0 m

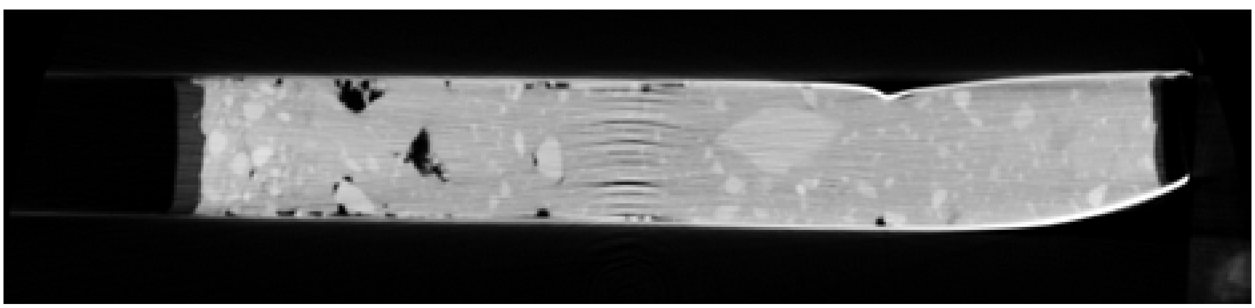
INFERRED UPPER TILL



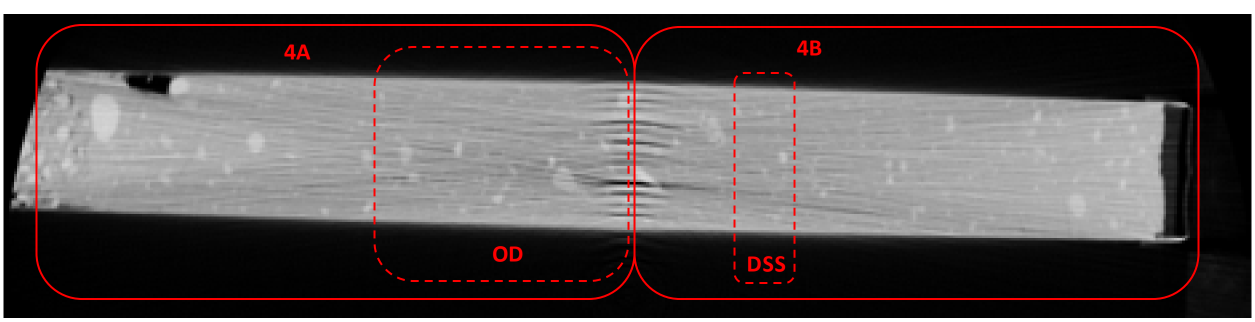
MR14-113 – Sa 1
Depth: 1.2 to 1.8 m / El. 928.2 to 927.6 m
INFERRED UPPER TILL



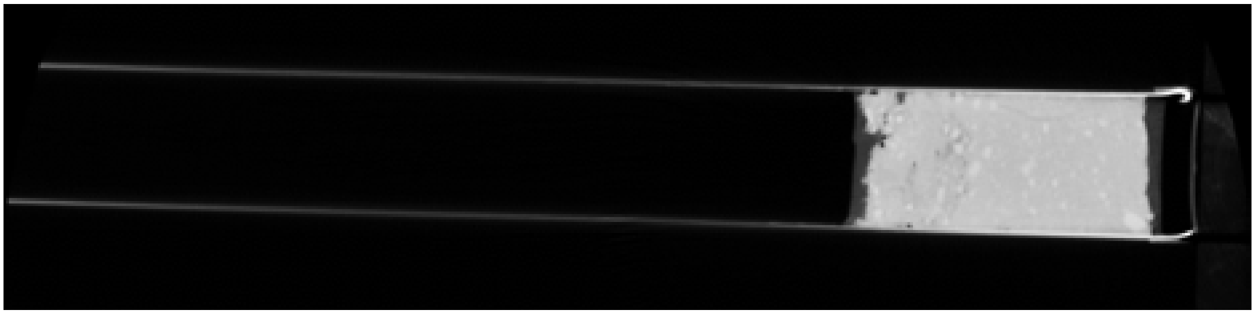
MR14-113 – Sa 2
Depth: 3.7 to 4.1 m / El. 925.7 to 925.3 m
INFERRED UPPER TILL



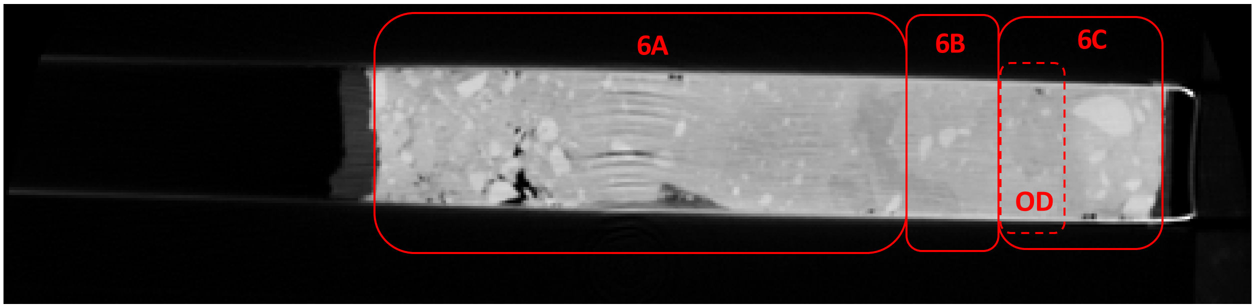
MR14-113 – Sa 3
Depth: 4.9 to 5.5 m / El. 924.5 to 923.9 m
INFERRED UPPER TILL



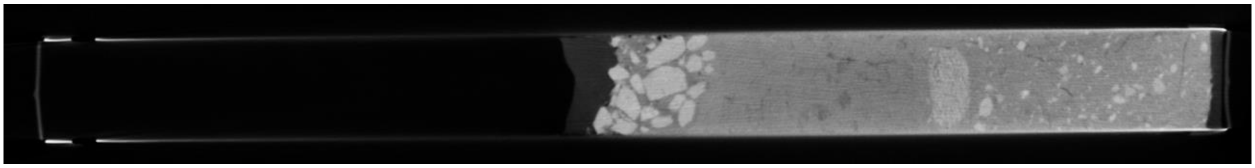
MR14-113 – Sa 4
Depth: 6.1 to 6.7 m / El. 923.3 to 922.7 m
INFERRED UPPER TILL



MR14-113 – Sa 5
Depth: 7.3 to 7.5 m / El. 922.1 to 921.9 m
INFERRED UPPER TILL

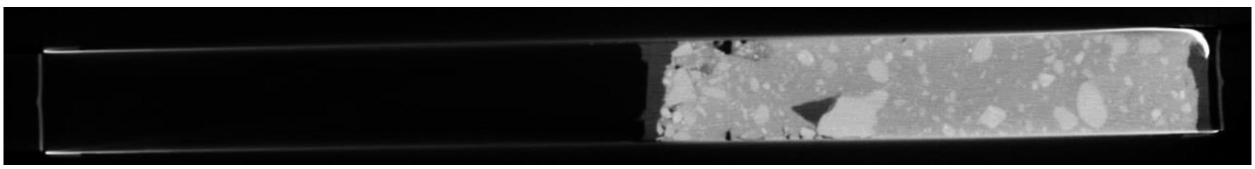


MR14-113 – Sa 6
Depth: 9.0 to 9.4 m / El. 920.4 to 920 m
INFERRED UPPER TILL



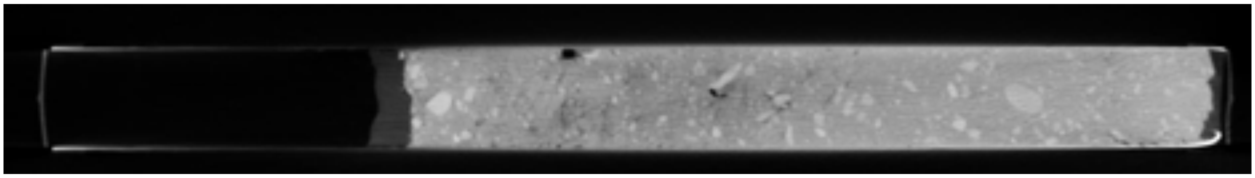
MR14-114 – Sa 1
Depth: 2.4 to 3.0 m / El. 928.2 to 927.6 m
INFERRED UPPER TILL

MR14-114 – Sa 2
Depth 3.7 to 4.3 m / El. 926.9 to 926.3 m
INFERRED UPPER TILL

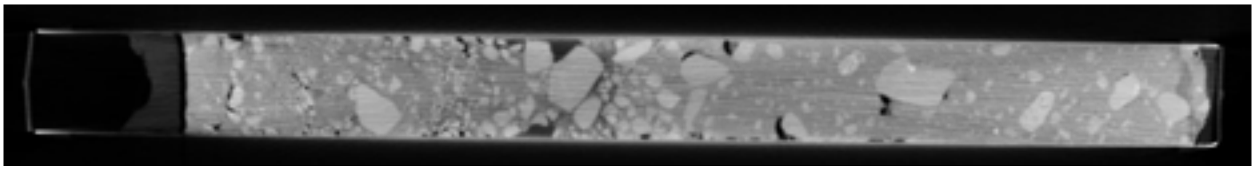


MR14-114 – Sa 3
Depth 4.6 to 5.2 m / El. 926.0 to 925.4 m
INFERRED UPPER TILL

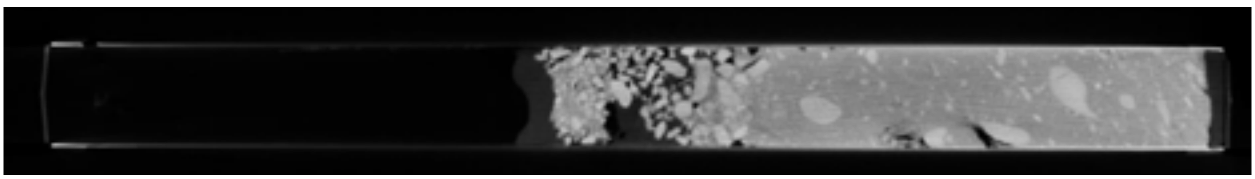
MR14-114 – Sa 5
Depth 6.4 to 7.0 m / El. 924.2 to 923.6 m
INFERRED UPPER TILL



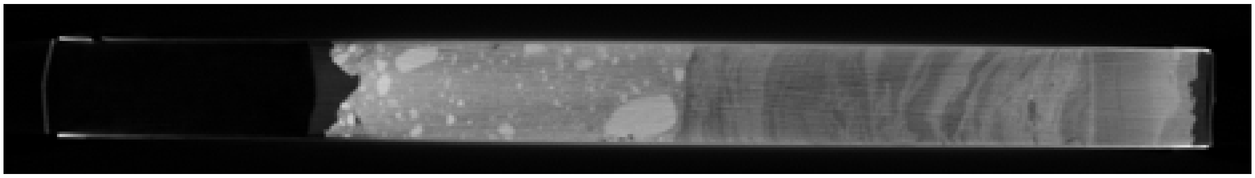
MR14-115 – Sa 1
Depth: 1.5 to 2.1 m / El. 927.6 to 927.0 m
INFERRED UPPER TILL



MR14-115 – Sa 3
Depth 3.5 to 4.1 m / El. 925.6 to 925.0 m
INFERRED UPPER TILL



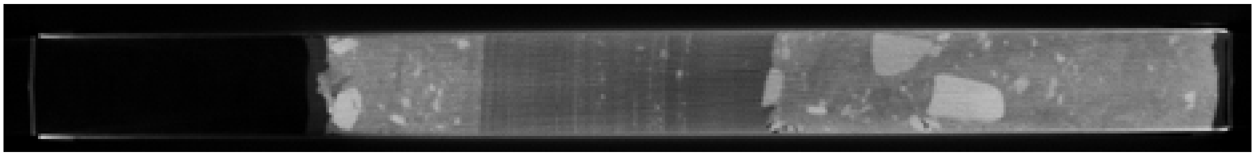
MR14-115 – Sa 4
Depth 4.3 to 4.9 m / El. 924.8 to 924.2 m
INFERRED UPPER TILL



MR14-117 – Sa 1

Depth: 11.9 to 12.5 m / El. 920.7 to 920.1 m

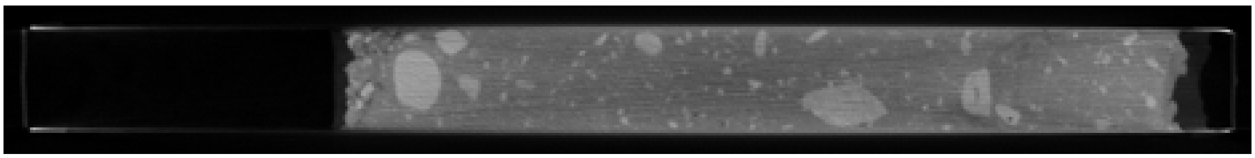
INFERRED UPPER TILL OVER UPPER GLU



MR14-117 – Sa 2

Depth: 12.5 to 13.1 m / El. 920.1 to 919.5 m

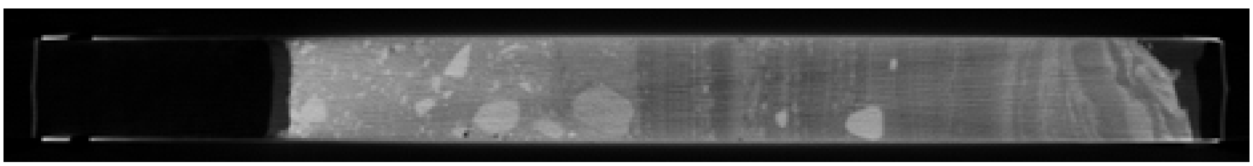
INFERRED UPPER GLU OVER LOWER TILLS



MR14-117 – Sa 3

Depth: 13.4 to 14.0 m / El. 919.2 to 918.6 m

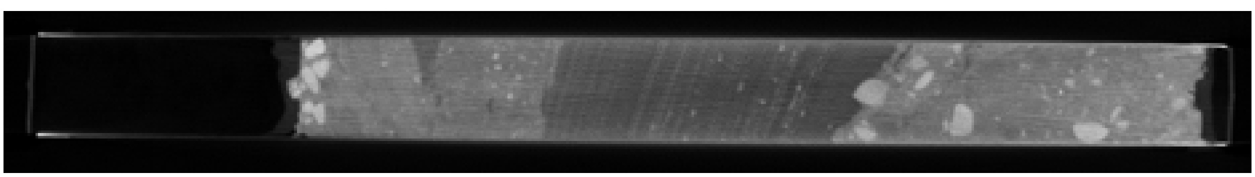
INFERRED LOWER TILLS (BASAL TILL)



MR14-117A – Sa 1

Depth: 11.9 to 12.5 m / El. 920.7 to 920.1 m

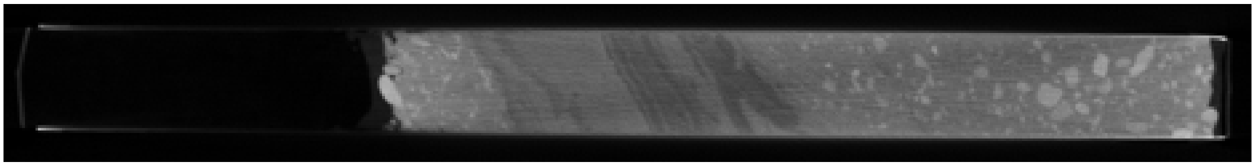
INFERRED UPPER TILL OVER UPPER GLU



MR14-117A – Sa 2

Depth: 12.5 to 13.1 m / El. 920.7 to 920.1 m

INFERRED UPPER GLU OVER LOWER TILLS



MR14-118 – Sa 1

Depth: 14.1 to 14.7 m / El. 923.6 to 923.0 m

INFERRED UPPER TILL WITH POSSIBLE UPPER GLU ZONE

MR14-118 – Sa 5

Depth: 16.8 to 17.4 m / El. 920.9 to 920.3 m

INFERRED UPPER GLU

MR14-118 – Sa 6

Depth: 17.4 to 18.0 m / El. 920.3 to 919.7 m

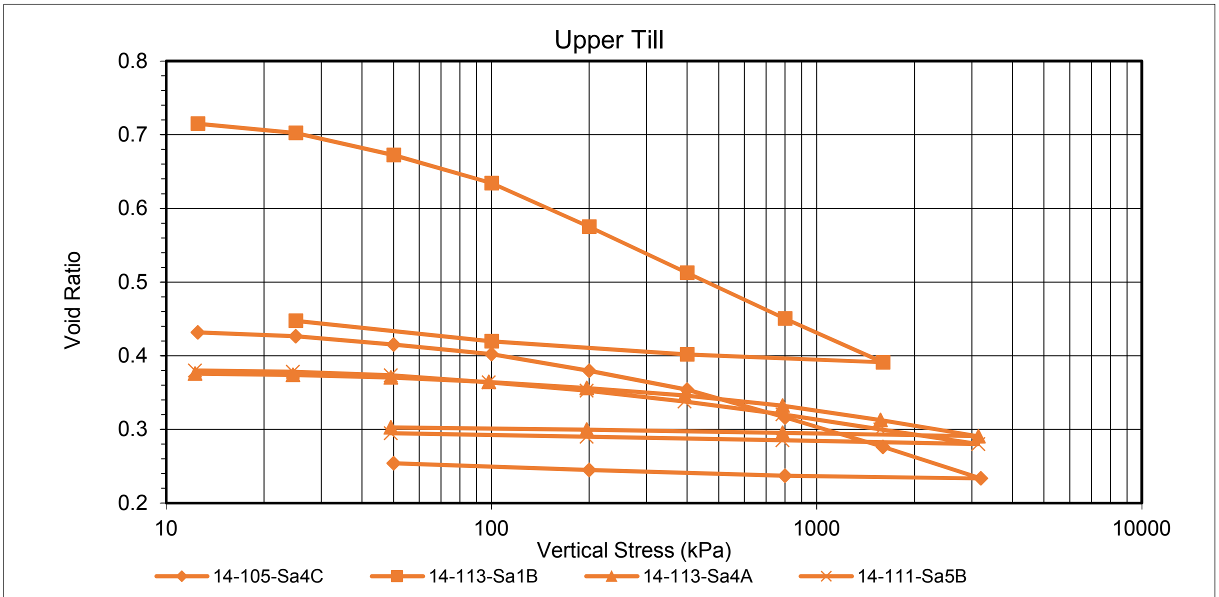
INFERRED LOWER TILLS (BASAL TILL)

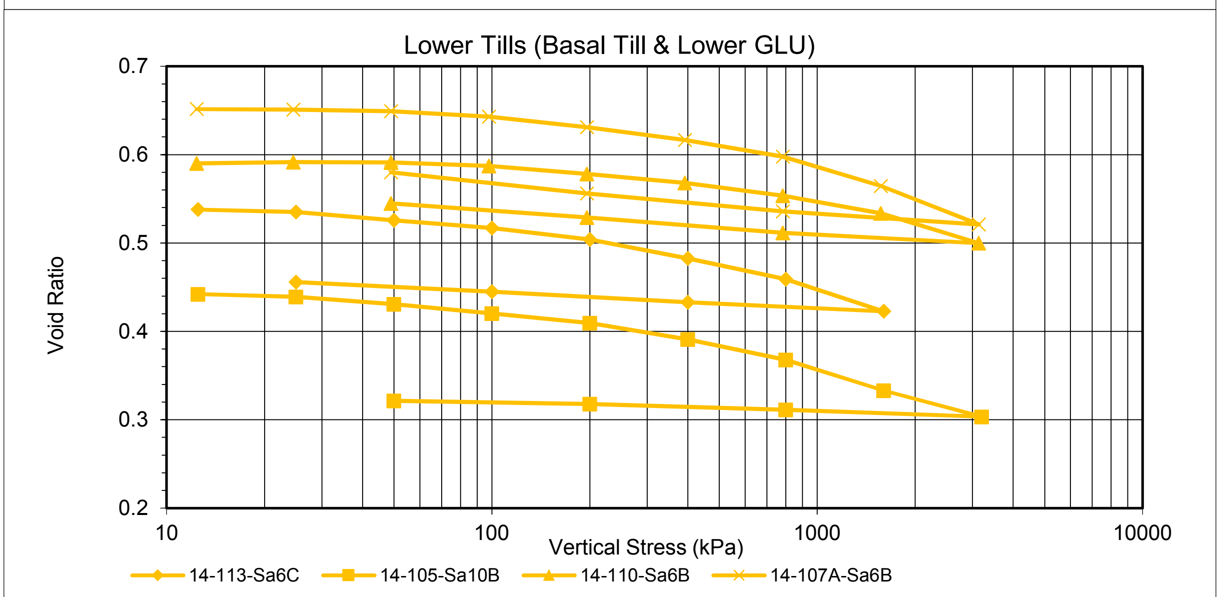
Appendix E
Attachment 2
Oedometer Test Data

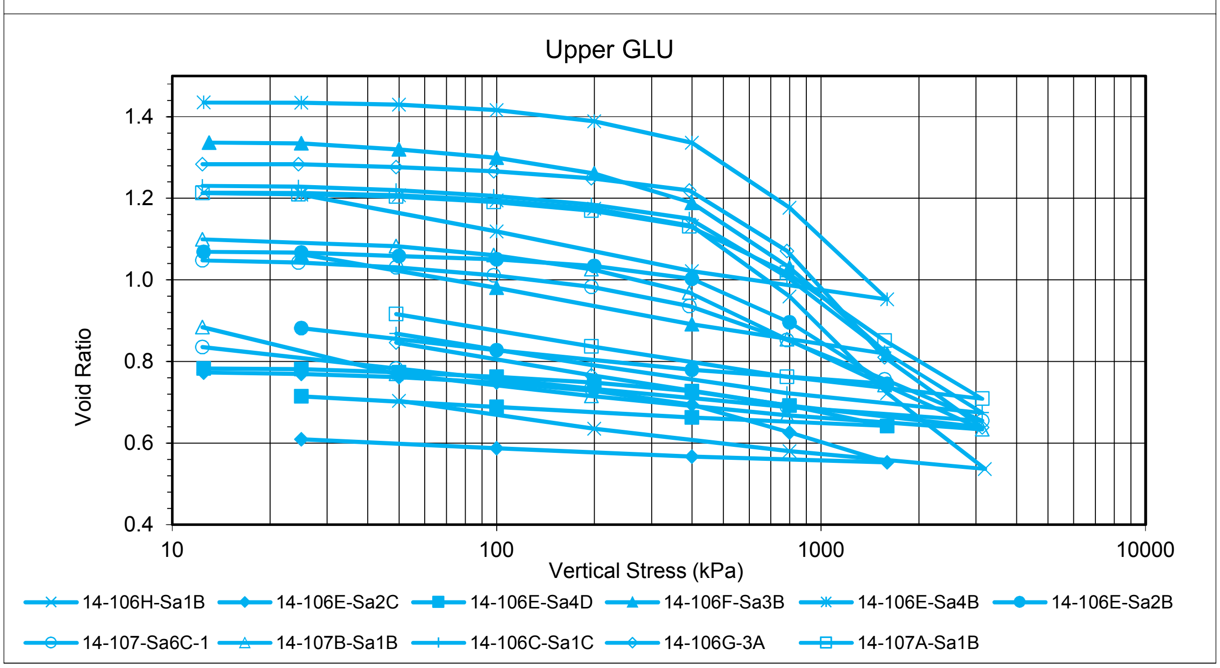
Panel Oedometer Test Data Summary

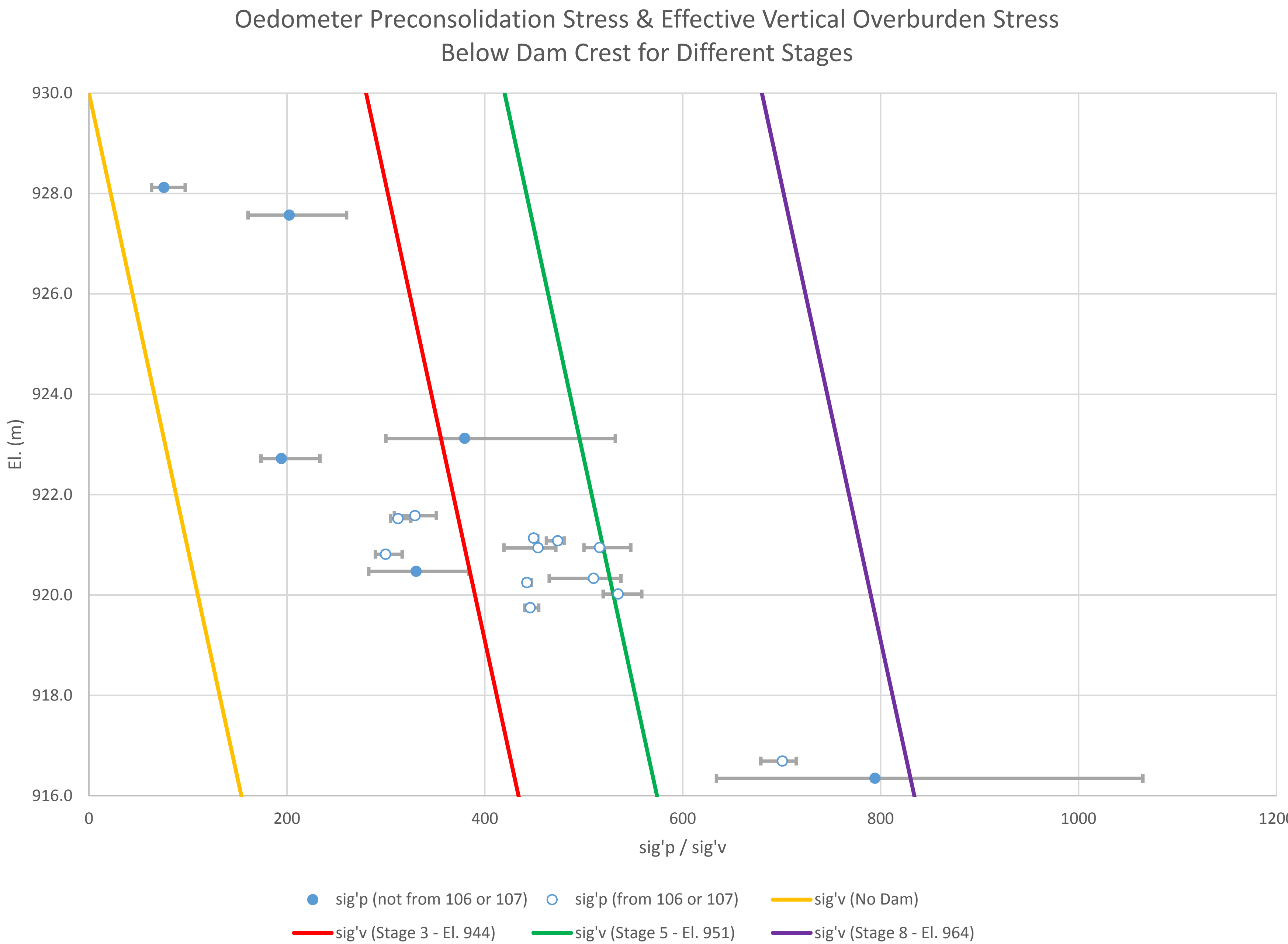
Sample	Depth (m)	Elevation (m)	Unit	W/C (%)	PI	eo	Estimted average σ'_p (kPa)*	Cs	Cc	C_α	C_α/Cc	Comments
14-105-Sa4C	4.1	927.6	Upper Till	12	11	0.439	203	0.010	0.13	0.003	0.02	
14-111-Sa5B	5.9	922.7	Upper Till	11	6	0.388	194	0.007	0.05	0.0012	0.02	
14-113-Sa1B	1.3	928.1	Upper Till	24	13	0.737	76	0.023	0.20	0.003	0.02	
14-113-Sa4A	6.3	923.1	Upper Till	11	7	0.382	380	0.007	0.08	0.0011	0.01	Questionable whether specimen is on NCL at end of loading
14-106C-Sa1C	7.6	920.9	Upper GLU	41	38	1.234	454	0.12871	0.56	0.00947	0.02	
14-106E-Sa2B	7.9	921.1	Upper GLU	35	24/29	1.068	474	0.06081	0.44	0.00755	0.02	
14-106E-Sa2C	8.2	920.8	Upper GLU	26	24/29	0.775	300	0.030	0.23	0.00546	0.02	
14-106E-Sa4B	9.0	920.0	Upper GLU	48	41	1.432	535	0.13319	0.61	0.01195	0.02	
14-106E-Sa4D	9.2	919.7	Upper GLU / Lower Tills Transition Zone	25	19	0.780	446	0.039	0.16	0.0037	0.02	
14-106F-Sa3B	8.5	920.2	Upper GLU	43	41	1.333	443	0.130	0.67	0.01635	0.02	
14-106G-Sa3A	8.4	920.3	Upper GLU	43	34	1.286	510	0.15805	0.71	0.01146	0.02	
14-106H-Sa1B	7.5	921.1	Upper GLU	41	36	1.212	449	0.079	0.68	0.01243	0.02	
14-107-Sa6C-1	7.1	921.6	Upper GLU	35	23	1.058	330	0.015	0.29	0.006	0.02	
14-107A-Sa1B	7.3	920.9	Upper GLU	40	25	1.129	516	IP	0.43	0.00988	0.02	
14-107B-Sa1B	6.9	921.5	Upper GLU	33	29	1.109	312	0.065	0.34	0.008	0.02	
14-105-Sa10B	11.2	920.5	Lower Tills (basal till)	13	8	0.448	331	0.012	0.11	0.0015	0.01	
14-107A-Sa6B	11.6	916.7	Lower Till (lower GLU)	22	15	0.653	701	0.02303	0.12	0.00152	0.01	
14-110-Sa6B	12.4	916.3	Lower Till (lower GLU)	17	13	0.587	794	0.017	0.08	0.0008	0.01	Swelling occurred at beginning of test, results questionable. Further examination of data required.
14-113-Sa6C	9.4	920.0	Lower Tills (basal till)	19	11	0.546	355	0.018	0.07	0.0019	0.03	Questionable whether specimen is on NCL at end of loading

* Estimated preconsoldiation pressure is an average of Casagrande, Bi-logarithmic and Work Method values.


Upper Till
Void Ratio
0.8
0.7
0.6
0.5
0.4
0.3
0.2
10
100
1000
10000
Vertical Stress (kPa)
14-105-Sa4C
14-113-Sa1B
14-113-Sa4A
14-111-Sa5B


Lower Tills (Basal Till & Lower GLU)
Void Ratio
0.7
0.6
0.5
0.4
0.3
0.2
10
100
1000
10000
Vertical Stress (kPa)
14-113-Sa6C
14-105-Sa10B
14-110-Sa6B
14-107A-Sa6B


Upper GLU
Void Ratio
1.4
1.2
1.0
0.8
0.6
0.4
10
100
1000
10000
Vertical Stress (kPa)
14-106H-Sa1B
14-106E-Sa2C
14-106E-Sa4D
14-106F-Sa3B
14-106E-Sa4B
14-106E-Sa2B
14-107-Sa6C-1
14-107B-Sa1B
14-106C-Sa1C
14-106G-3A
14-107A-Sa1B


Oedometer Preconsolidation Stress & Effective Vertical Overburden Stress
Below Dam Crest for Different Stages
El. (m)
930.0
928.0
926.0
924.0
922.0
920.0
918.0
916.0
0
200
400
600
800
1000
1200
sig'p / sig'v
sig'p (not from 106 or 107)
sig'p (from 106 or 107)
sig'v (No Dam)
sig'v (Stage 3 - El. 944)
sig'v (Stage 5 - El. 951)
sig'v (Stage 8 - El. 964)

Summary of cv Values from Panel Oedometer Testing

Coefficient of Consolidation, c_v (cm^2/sec) - from Oedometer Tests										
Vertical Stress (kPa)	14-105-Sa4C	14-111-Sa5B	14-113-Sa1B	14-113-Sa4A	14-106C-Sa1C	14-106E-Sa2B	14-106E-Sa2C	14-106E-Sa4B	14-106E-Sa4D	14-106F-Sa3B
	Upper Till	Upper Till	Upper Till	Upper Till	Upper GLU	Upper GLU	Upper GLU	Upper GLU	Upper GLU / Lower Tills Transition Zone	Upper GLU
12.5	6.54E-03	3.64E-04	7.60E-03	6.28E-04	1.08E-02	NC	NC	NC	NC	NC
25	3.47E-02	3.10E-04	3.47E-04	8.82E-04	1.09E-04	2.59E-02	1.05E-03	1.79E-03	4.84E-03	3.68E-03
50	1.99E-02	5.57E-04	1.96E-03	7.83E-04	1.18E-03	1.96E-03	1.51E-03	2.78E-03	1.96E-03	3.19E-03
100	3.24E-02	1.32E-03	2.95E-03	1.03E-03	9.98E-04	4.16E-03	6.23E-03	2.17E-03	4.69E-02	5.17E-03
200	2.70E-02	1.48E-03	1.33E-03	1.64E-03	1.56E-03	4.12E-03	2.70E-03	2.38E-03	2.92E-02	3.49E-03
400	1.57E-02	2.74E-03	1.01E-03	1.88E-03	1.07E-03	2.27E-03	2.83E-03	1.58E-03	2.87E-02	1.15E-03
800	1.61E-02	3.65E-03	8.19E-04	6.21E-03	2.46E-04	9.53E-04	7.86E-04	4.86E-04	5.29E-03	5.18E-04
1600	6.13E-03	6.18E-03	8.52E-04	9.93E-03	3.68E-04	8.32E-04	1.35E-03	2.22E-04	6.48E-03	3.86E-04
3200	3.44E-03	8.17E-03	N/A	7.56E-03	4.28E-04	N/A	N/A	N/A	N/A	N/A

Coefficient of Consolidation, c_v (cm^2/sec) - from Oedometer Tests									
Vertical Stress (kPa)	14-106G-3A	14-106H-Sa1B	14-107-Sa6C-1	14-107A-Sa1B	14-107B-Sa1B	14-105-Sa10B	14-113-Sa6C	14-107A-Sa6B	14-110-Sa6B
	Upper GLU	Upper GLU	Upper GLU	Upper GLU	Upper GLU	Lower Tills (Basal Till)	Lower Tills (Basal Till)	Lower Tills (Lower GLU)	Lower Tills (Lower GLU)
12.5	1.11E-02	NC	2.48E-04	1.40E-02	3.67E-04	1.26E-03	2.45E-03	5.76E-03	1.21E-04
25	1.24E-03	3.81E-02	5.59E-04	1.13E-03	N/A	2.64E-03	5.70E-03	2.47E-03	3.43E-03
50	2.26E-03	3.81E-02	6.43E-04	6.73E-04	3.67E-04	8.85E-03	8.90E-03	4.68E-03	1.19E-02
100	2.81E-03	3.78E-02	6.45E-04	7.05E-04	4.75E-04	1.04E-02	3.89E-03	2.65E-03	6.32E-03
200	2.88E-03	1.93E-02	8.19E-04	7.86E-04	4.25E-04	1.29E-02	1.24E-02	3.53E-03	7.43E-03
400	2.48E-03	1.27E-02	6.07E-04	7.55E-04	4.01E-04	1.10E-02	3.79E-03	5.11E-03	5.79E-03
800	4.50E-04	7.35E-04	5.47E-04	2.61E-04	3.68E-04	7.51E-03	6.96E-03	5.89E-03	8.42E-03
1600	1.57E-03	9.43E-04	7.49E-04	2.86E-04	6.04E-04	7.24E-03	8.65E-03	4.61E-03	1.06E-02
3200	5.40E-04	1.98E-03	9.10E-04	3.00E-04	6.94E-04	4.20E-03	N/A	5.37E-03	9.25E-03

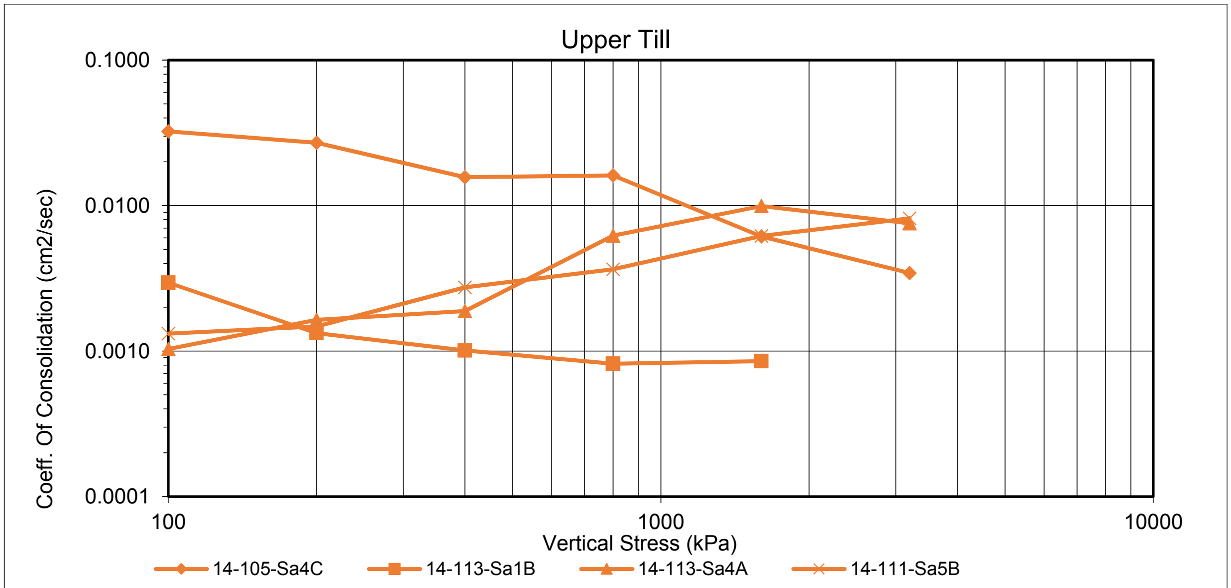
Notes:

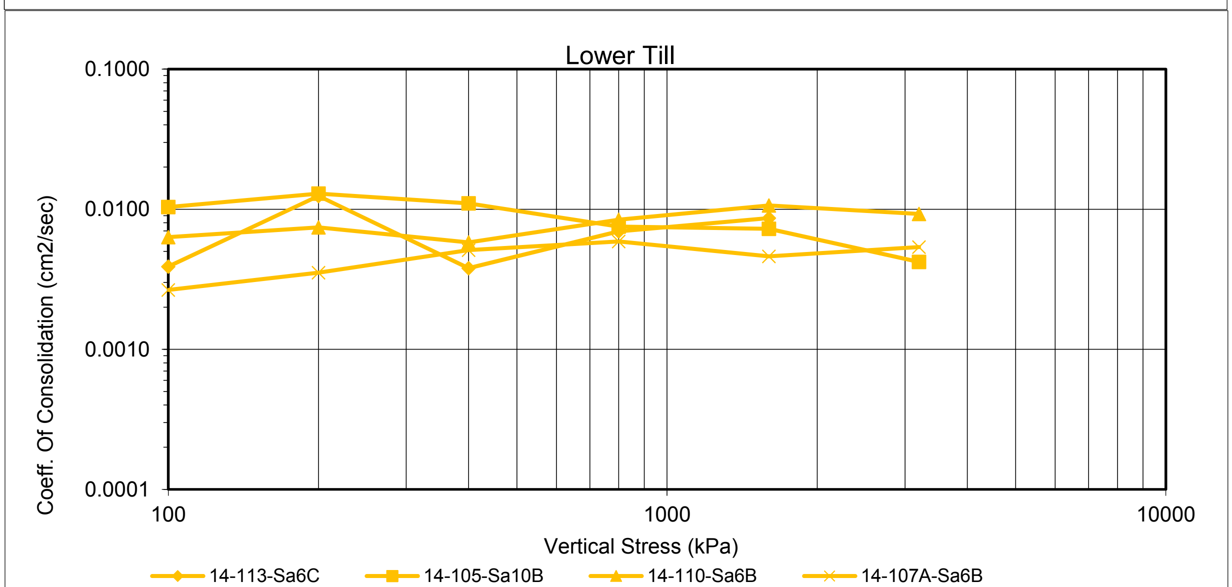
N/A - No load increment, c_v not calculated.

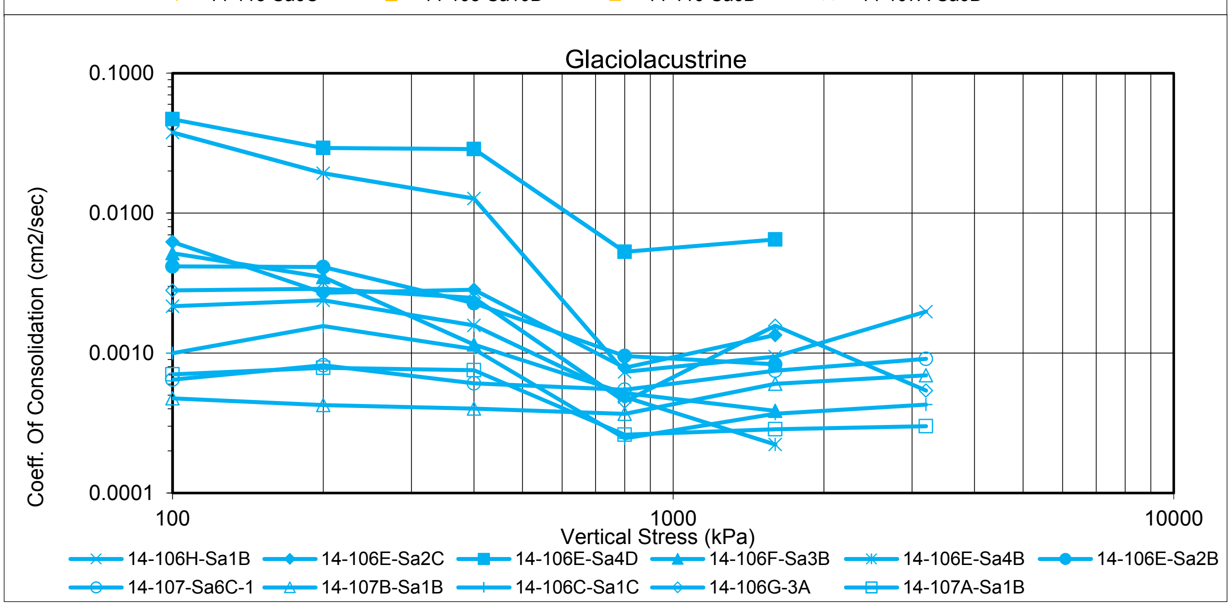
NC - Negligible consolidation, c_v not calculated

Coefficient of Consolidation, c_v (cm^2/sec) - from Triaxial Tests														
Confining Stress (kPa)	14-111-Sa5A	14-105-Sa4	14-113-Sa1	14-106 Sa2	14-106E Sa3B	14-106E Sa3C	14-106E Sa2C	MR14-106C Sa1B	14-106F Sa 2B	14-106F Sa 2B	14-106F Sa 2B	MR14-106G Sa2B	MR14-106G Sa2B	MR14-106G Sa2B
50						1.68E-03			8.10E-04			3.47E-03		
75							3.64E-03							
100						6.40E-04			1.11E-03	3.58E-04		2.55E-03	1.29E-03	
150							2.62E-03		1.44E-03	N/A		2.86E-03		
200	5.55E-04	1.93E-03	2.10E-04	3.63E-04	2.62E-03					2.63E-03	1.72E-03		9.08E-04	1.76E-03
300						4.62E-04							9.18E-04	
400											6.20E-03			1.00E-03
600	4.94E-04	8.51E-04	1.44E-04	7.42E-04	2.06E-04						1.24E-03			5.97E-04

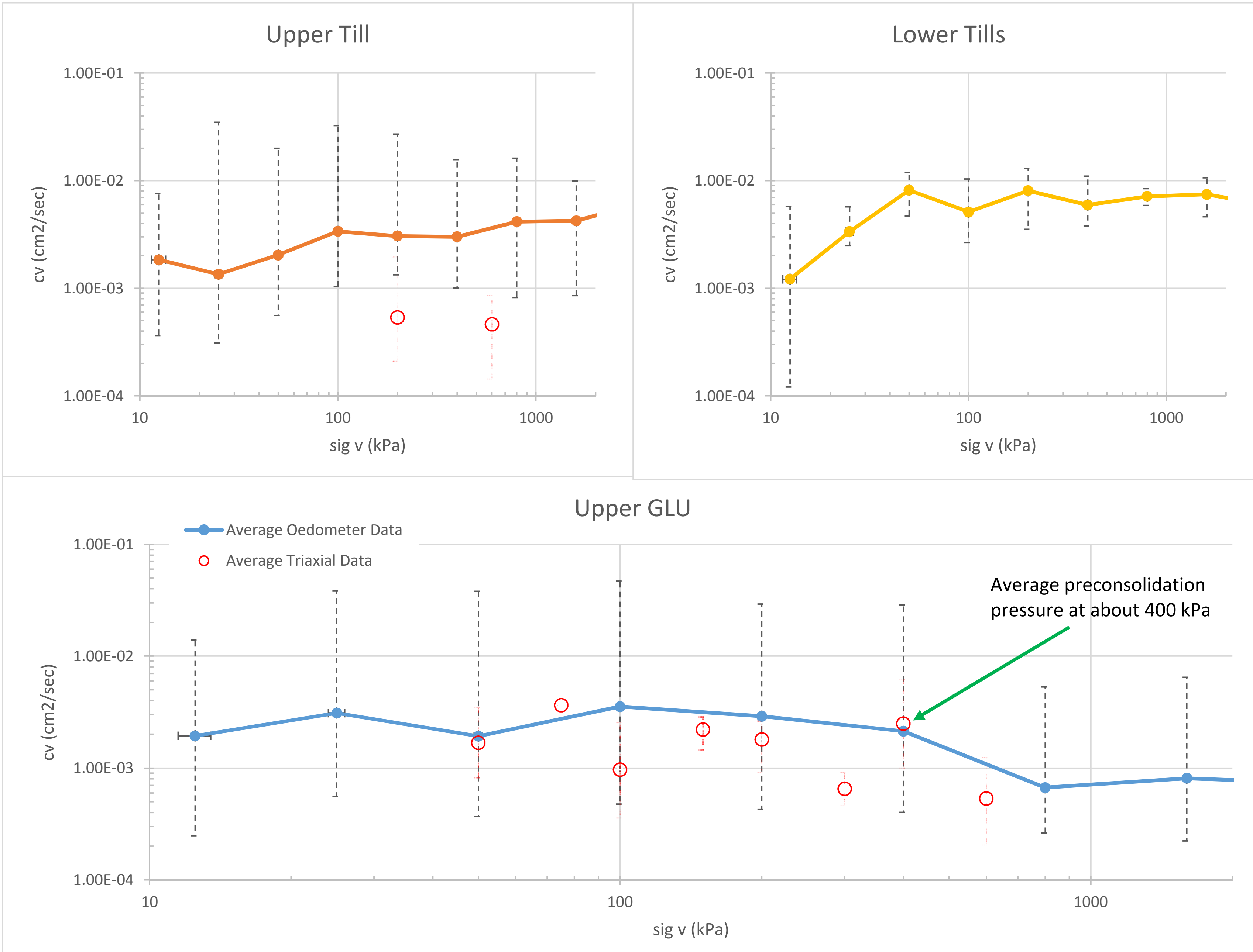
	Average cv (cm2/sec) from Oedometer Tests			Min. cv (cm2/sec) from Oedometer Tests			Max. cv (cm2/sec) from Oedometer Tests		
Vertical Stress (kPa)	Upper Till	Upper GLU	Lower Tills	Upper Till	Upper GLU	Lower Tills	Upper Till	Upper GLU	Lower Tills
12.5	1.83E-03	1.94E-03	1.21E-03	3.64E-04	2.48E-04	1.21E-04	7.60E-03	1.40E-02	5.76E-03
25	1.35E-03	3.09E-03	3.36E-03	3.10E-04	5.59E-04	2.47E-03	3.47E-02	3.81E-02	5.70E-03
50	2.03E-03	1.93E-03	8.14E-03	5.57E-04	3.67E-04	4.68E-03	1.99E-02	3.81E-02	1.19E-02
100	3.38E-03	3.54E-03	5.10E-03	1.03E-03	4.75E-04	2.65E-03	3.24E-02	4.69E-02	1.04E-02
200	3.05E-03	2.89E-03	8.06E-03	1.33E-03	4.25E-04	3.53E-03	2.70E-02	2.92E-02	1.29E-02
400	3.01E-03	2.13E-03	5.93E-03	1.01E-03	4.01E-04	3.79E-03	1.57E-02	2.87E-02	1.10E-02
800	4.16E-03	6.67E-04	7.14E-03	8.19E-04	2.61E-04	5.89E-03	1.61E-02	5.29E-03	8.42E-03
1600	4.23E-03	8.09E-04	7.44E-03	8.52E-04	2.22E-04	4.61E-03	9.93E-03	6.48E-03	1.06E-02
3200	5.97E-03	7.27E-04	5.93E-03	3.44E-03	3.00E-04	4.20E-03	8.17E-03	1.98E-03	9.25E-03
Average	3E-03	2E-03	6E-03						
Avg for Vert Stress < 400 kPa		3E-03							
Avg for Vert Stress > 400 kPa		7E-04							


Upper Till
0.1000
0.0100
0.0010
0.0001
Coeff. Of Consolidation (cm2/sec)
100
1000
10000
Vertical Stress (kPa)
14-105-Sa4C
14-113-Sa1B
14-113-Sa4A
14-111-Sa5B


Lower Till
0.1000
0.0100
0.0010
0.0001
Coeff. Of Consolidation (cm2/sec)
100
1000
10000
Vertical Stress (kPa)
14-113-Sa6C
14-105-Sa10B
14-110-Sa6B
14-107A-Sa6B


Glaciolacustrine
0.1000
0.0100
0.0010
0.0001
Coeff. Of Consolidation (cm2/sec)
100
1000
10000
Vertical Stress (kPa)
14-106H-Sa1B
14-106E-Sa2C
14-106E-Sa4D
14-106F-Sa3B
14-106E-Sa4B
14-106E-Sa2B
14-107-Sa6C-1
14-107B-Sa1B
14-106C-Sa1C
14-106G-3A
14-107A-Sa1B

Summary of cv Values from Panel Oedometer and Triaxial Tests



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

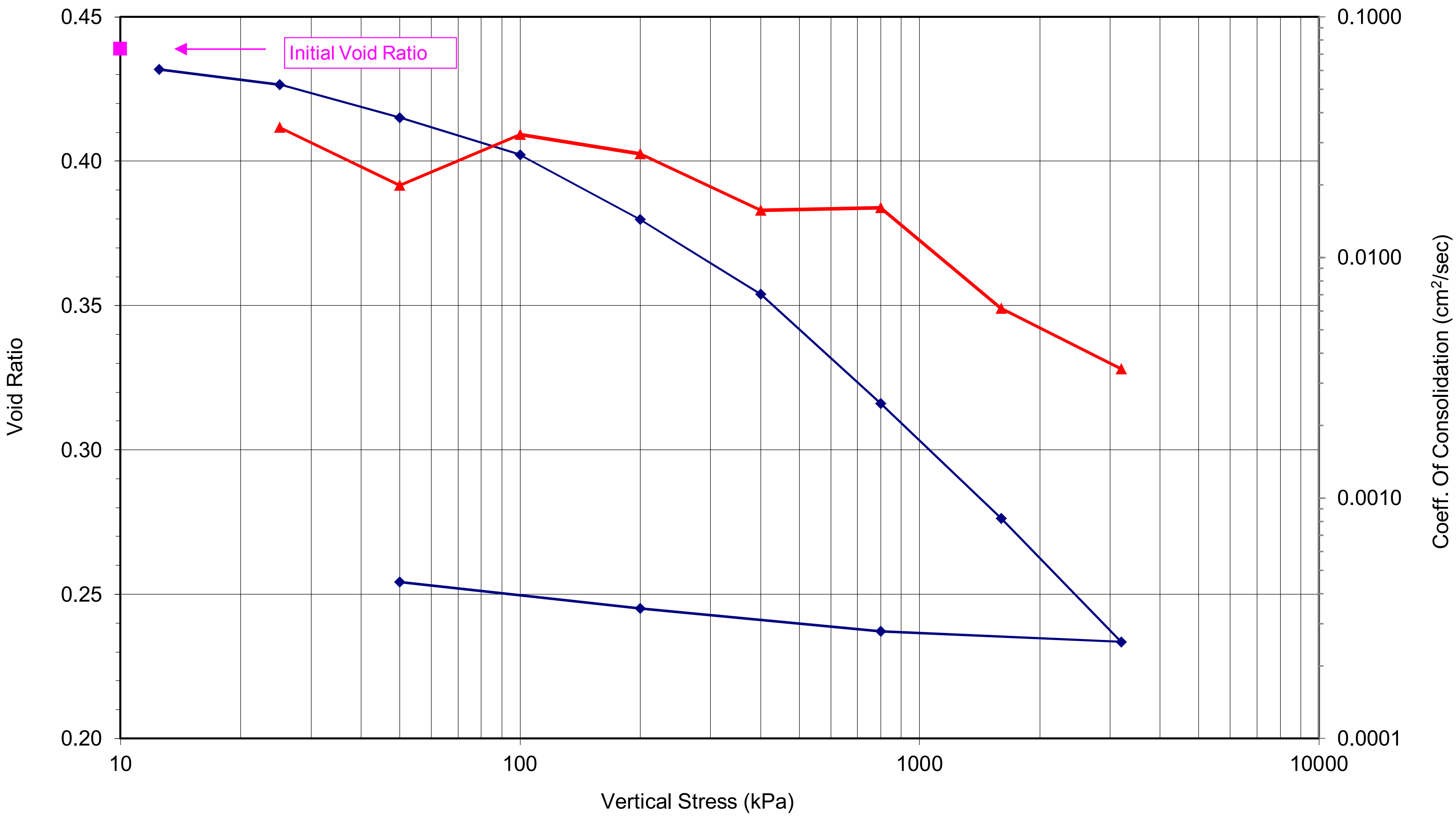
THURBER

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-105, Sa. 4C, 4.1 m / El. 927.5 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 3 - 11, 2014

Initial Water Content =	11.7	%	e_0 =	0.439	LL =	25	%
Final Water Content =	13.2	%	Gs =	2.78	PL =	14	%
					PI =	11	%

Void Ratio (end of load increment) Vs Log of Pressure

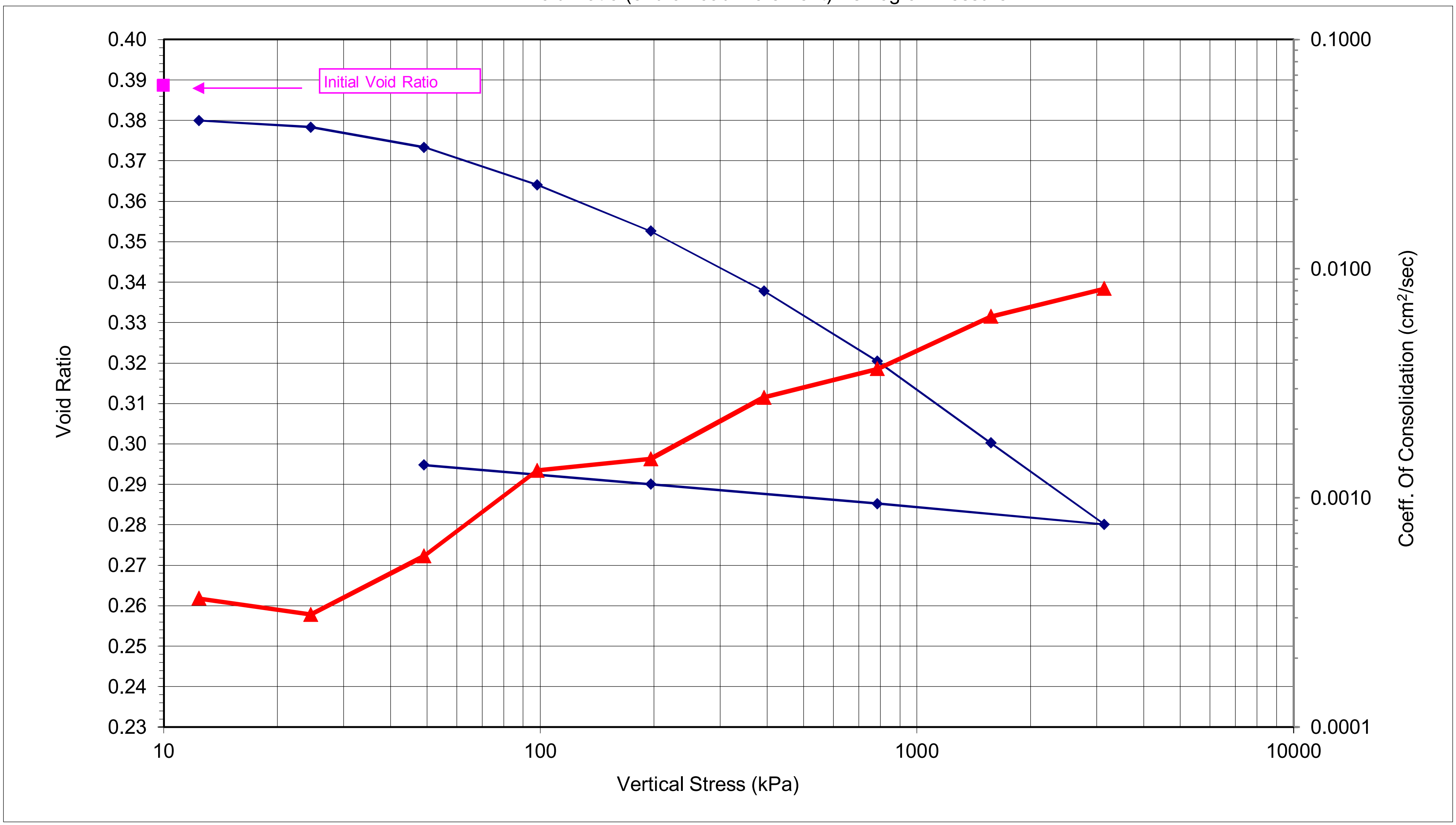


THURBER

ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-111, Sa. 5B, 5.9 m / El. 922.7 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014					
File Number: 15-3-280			Test Dates: Oct. 29 - Nov. 5, 2014					
Initial Water Content =	10.8	%	e_0 =	0.388		LL =	21	%
Final Water Content =	10.0	%	Gs =	2.78		PL =	15	%
						PI =	6	%

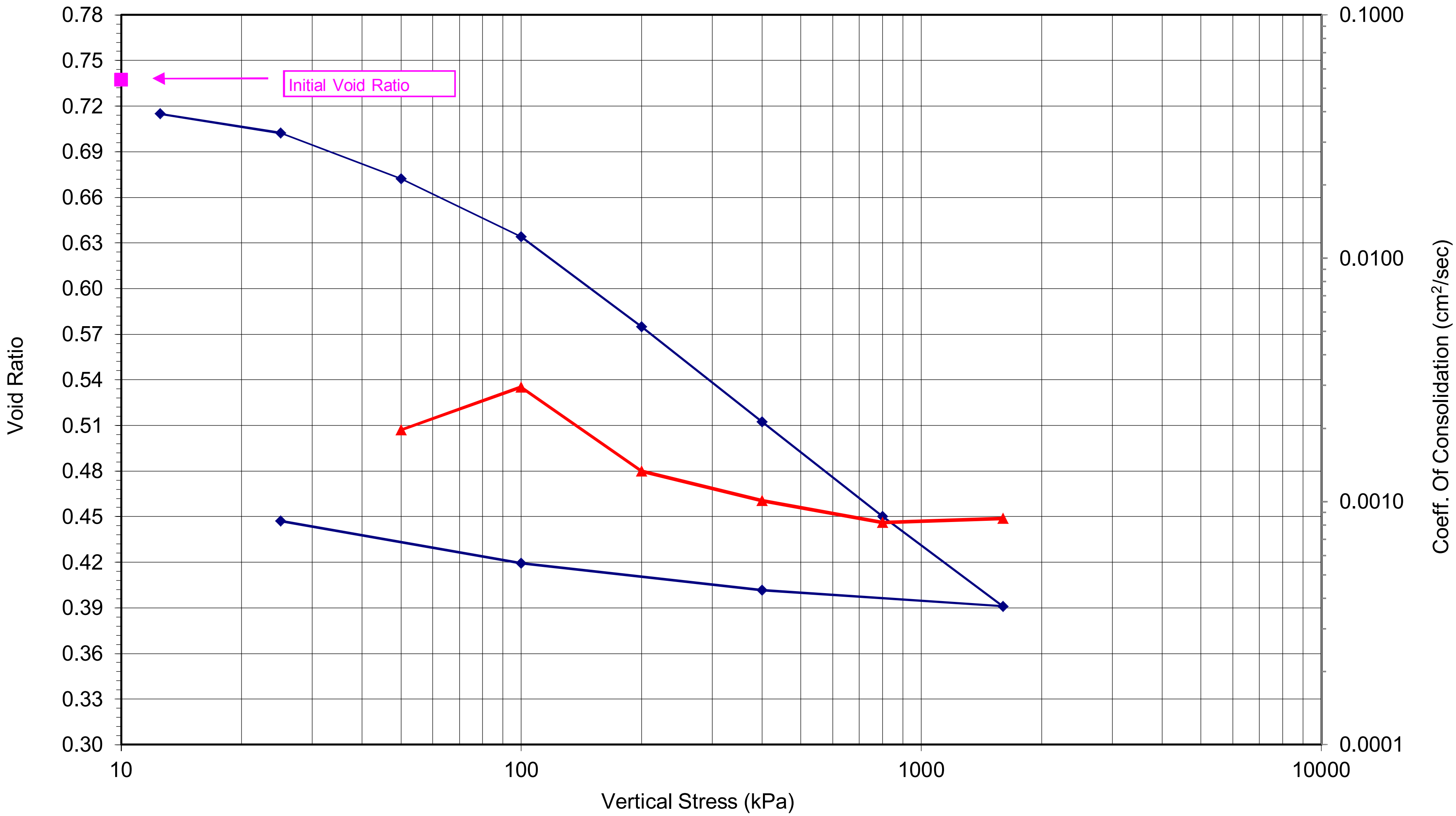
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-113, Sa. 1B, 1.3 m / El. 928.1 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014					
File Number: 15-3-280			Test Dates: Nov. 4 - 12, 2014					
Initial Water Content =	23.5	%	e_0 =	0.737		LL =	27	%
Final Water Content =	19.6	%	Gs =	2.78		PL =	14	%
						PI =	13	%

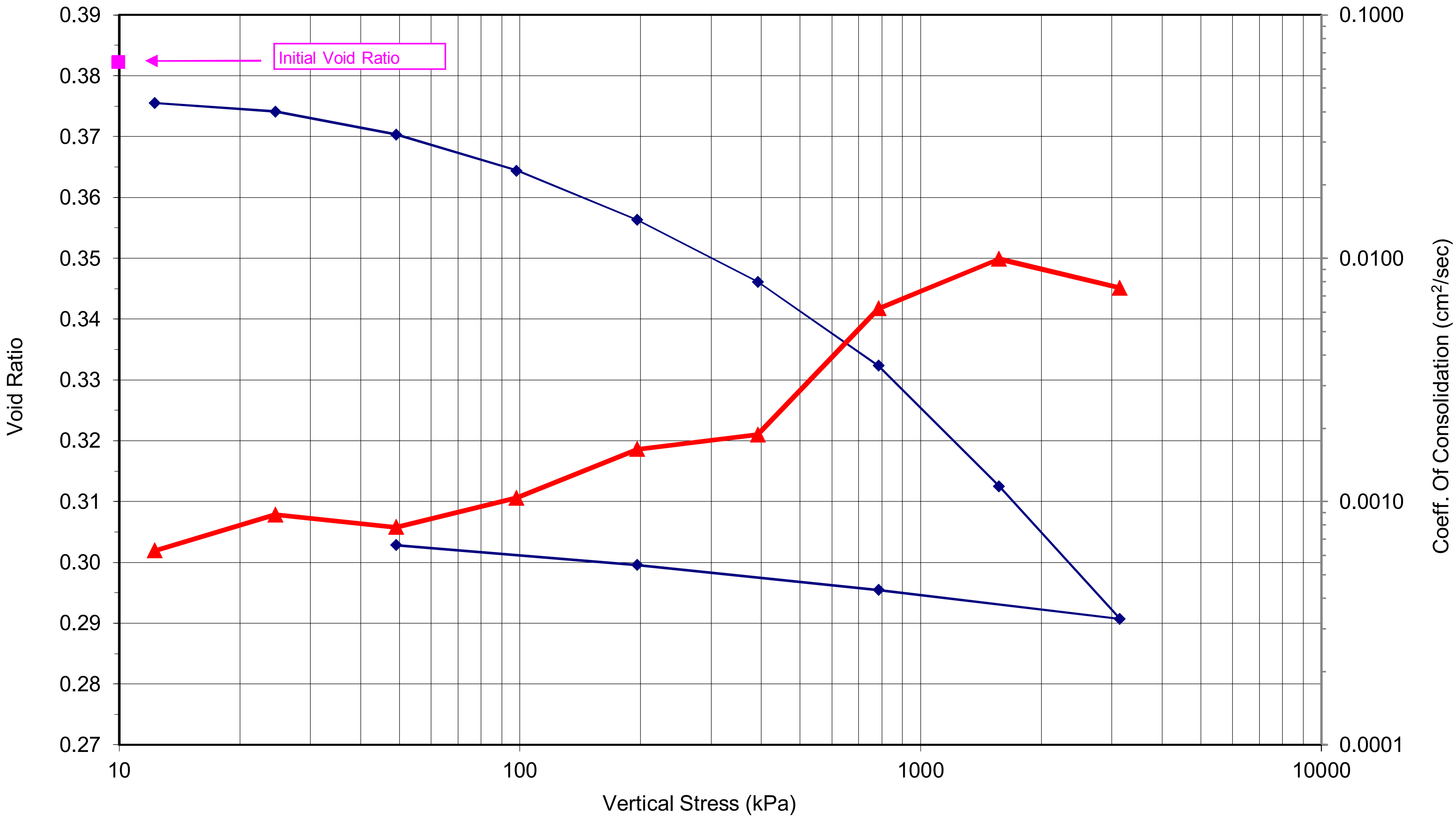
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel		MR14-113, Sa. 4A, 6.3 m / El. 923.1 m				
Mount Polley Tailings Storage Facility Breach		Report Date: Dec. 12, 2014				
File Number: 15-3-280		Test Dates: Oct. 29 - Nov. 5, 2014				
Initial Water Content =	10.8 %	e_0 =	0.382	LL =	21	%
Final Water Content =	12.4 %	Gs =	2.78	PL =	14	%
				PI =	7	%

Void Ratio (end of load increment) Vs Log of Pressure



THURBER

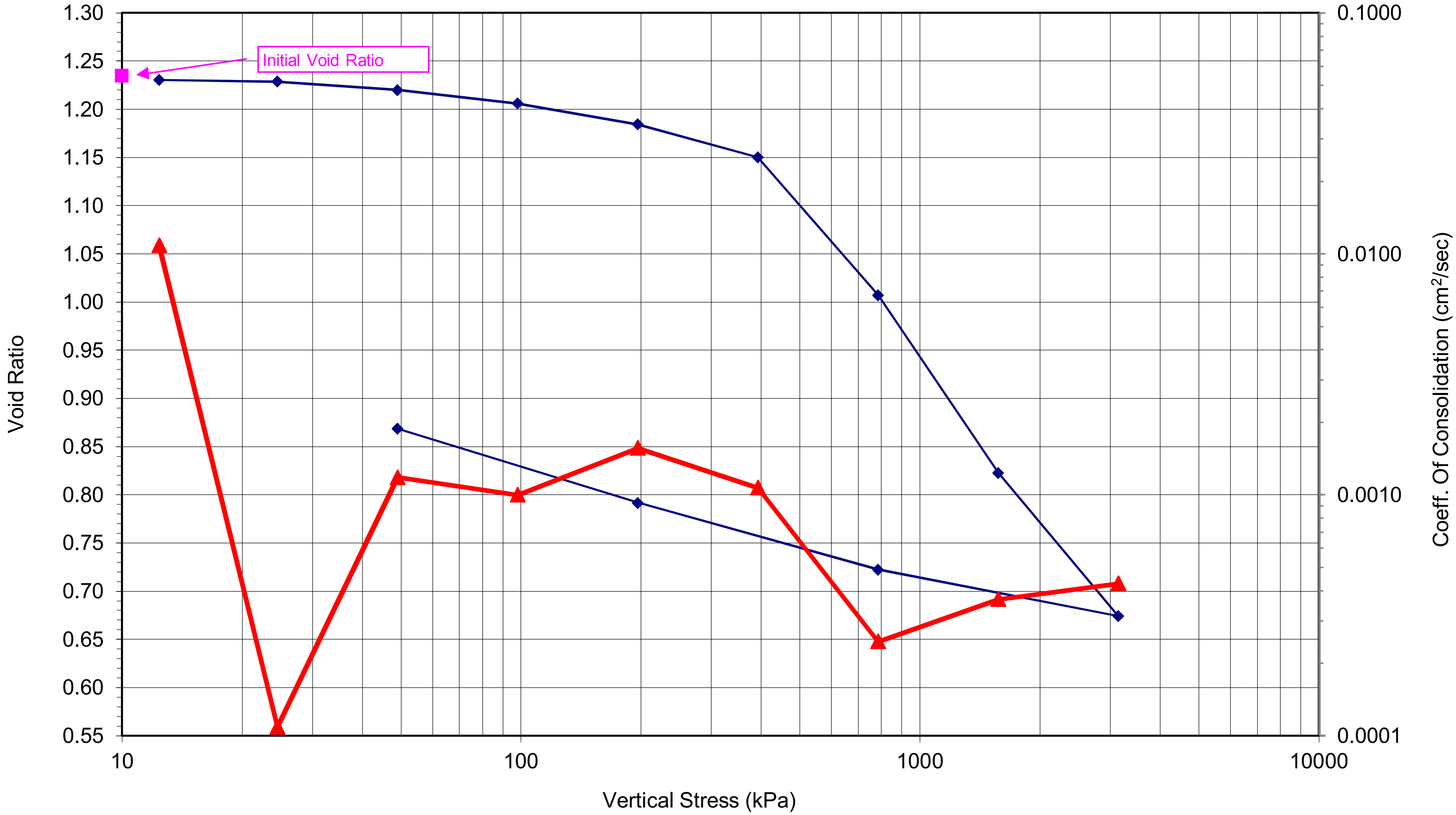
ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-106C, Sa. 1C, 7.6 m / El. 921.0 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 17 - 24, 2014

Initial Water Content =	41.2	%	e_0 =	1.234	LL =	62	%
Final Water Content =	33.3	%	Gs =	2.83	PL =	24	%
					PI =	38	%

Void Ratio (end of load increment) Vs Log of Pressure



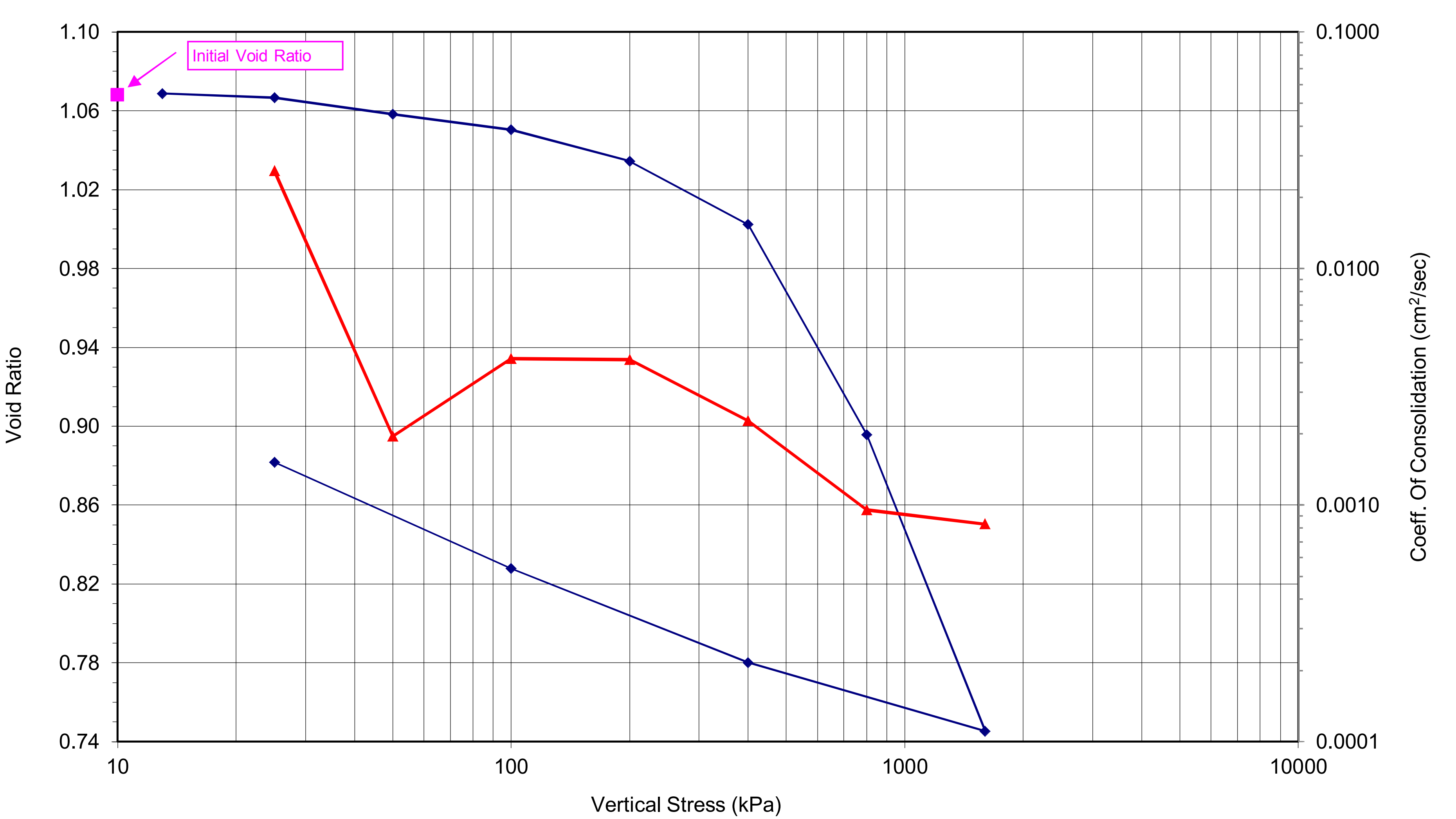
ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3.-280

MR14-106E, Sa. 2B, 7.9 m / El. 921.1 m
Report Date: Dec. 12, 2014
Test Dates: Dec. 1 - 7, 2014

Initial Water Content =	35.2	%	e_0 =	1.068	LL =	55	%
Final Water Content =	32.9	%	Gs =	2.86	PL =	22	%
					PI =	33	%

Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

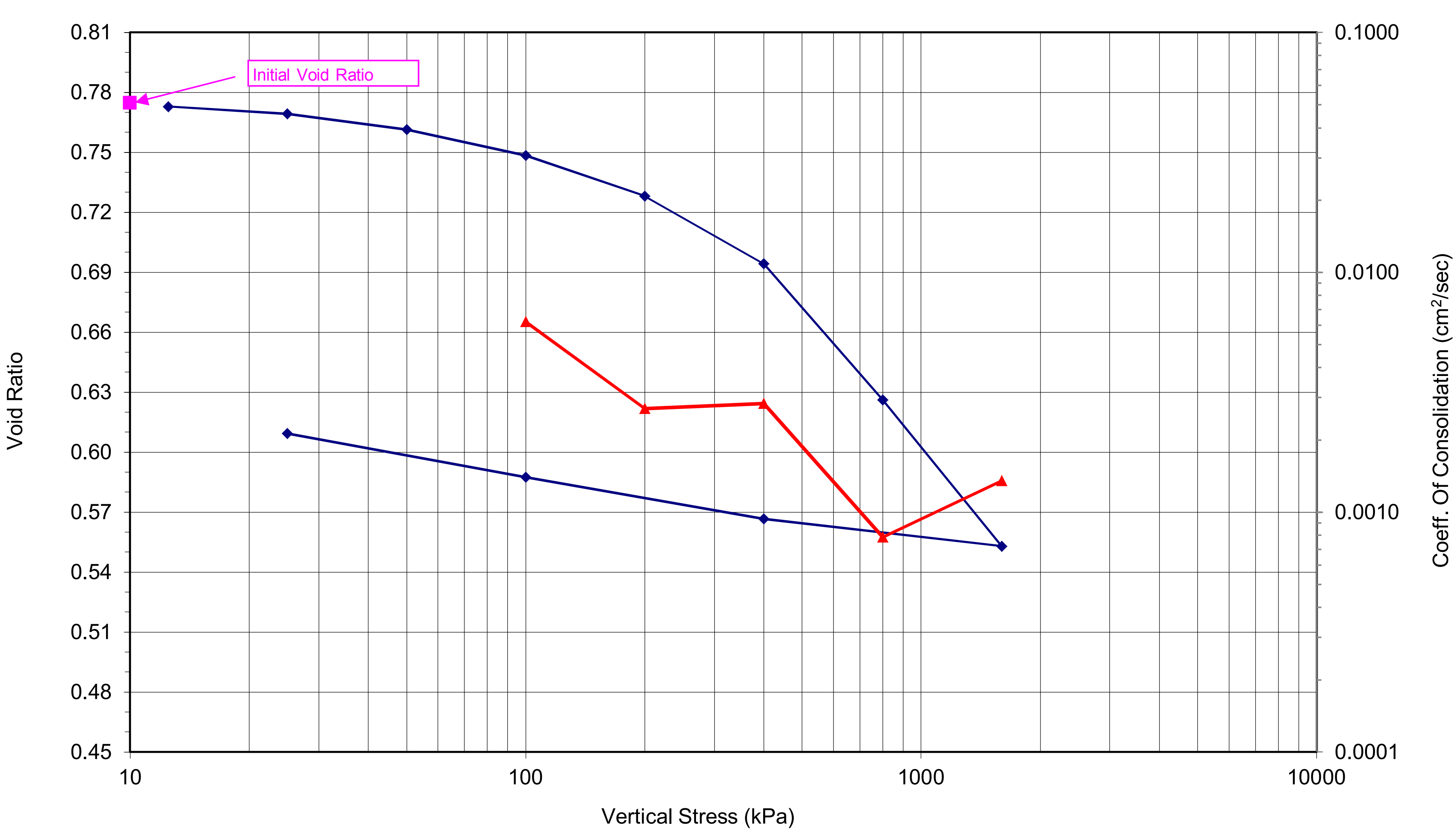
THURBER

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-106E, Sa. 2C, 8.2 m / El. 920.8 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 18 - 25, 2014

Initial Water Content =	25.5	%	e_0 =	0.775	LL =	42	%
Final Water Content =	21.7	%	Gs =	2.86	PL =	18	%
					PI =	24	%

Void Ratio (end of load increment) Vs Log of Pressure



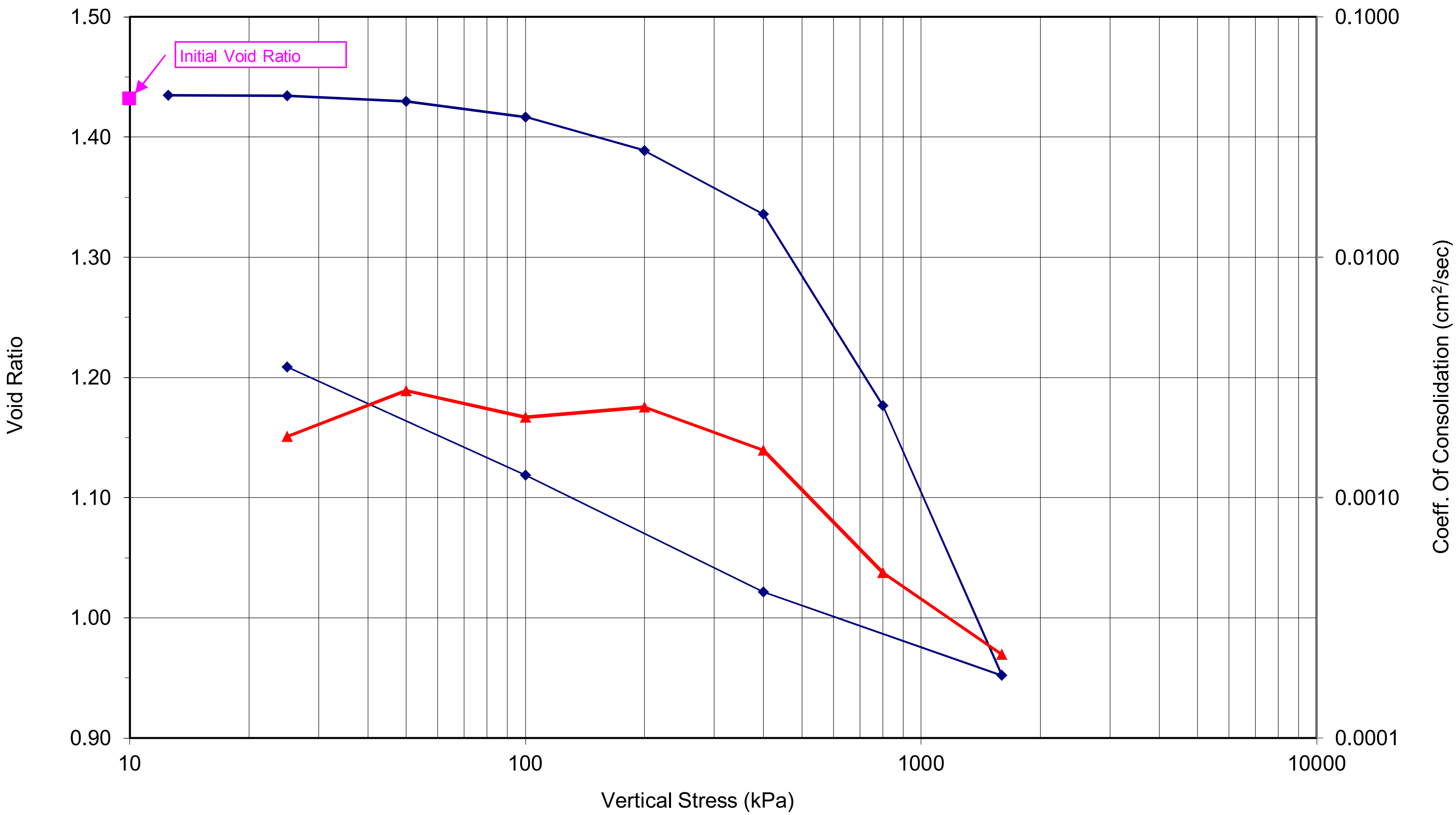
ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOTS

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-106E, Sa. 4B, 9.0 m / El. 920.0 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 27 -Dec. 5, 2014

Initial Water Content =	48.4	%	e_0 =	1.432	LL =	63	%
Final Water Content =	46.9	%	Gs =	2.86	PL =	22	%
					PI =	41	%

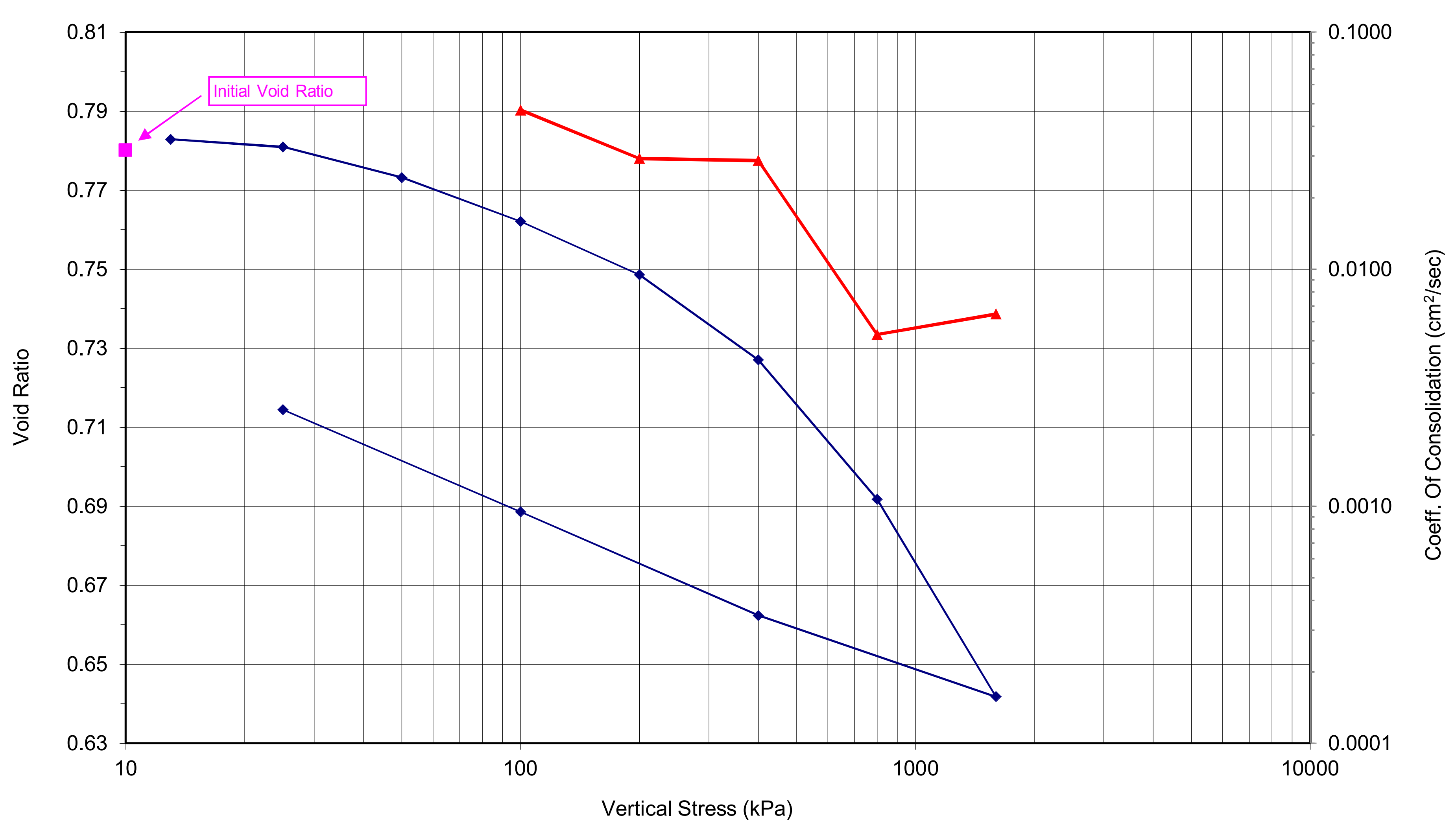
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-106E, Sa. 4D, 9.2 m / El. 919.7 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014					
File Number: 15-3.-280			Test Dates: Nov. 19 - 25, 2014					
Initial Water Content =	24.7	%	e_0 =	0.780		LL =	41	%
Final Water Content =	26.6	%	Gs =	2.86		PL =	22	%
						PI =	19	%

Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

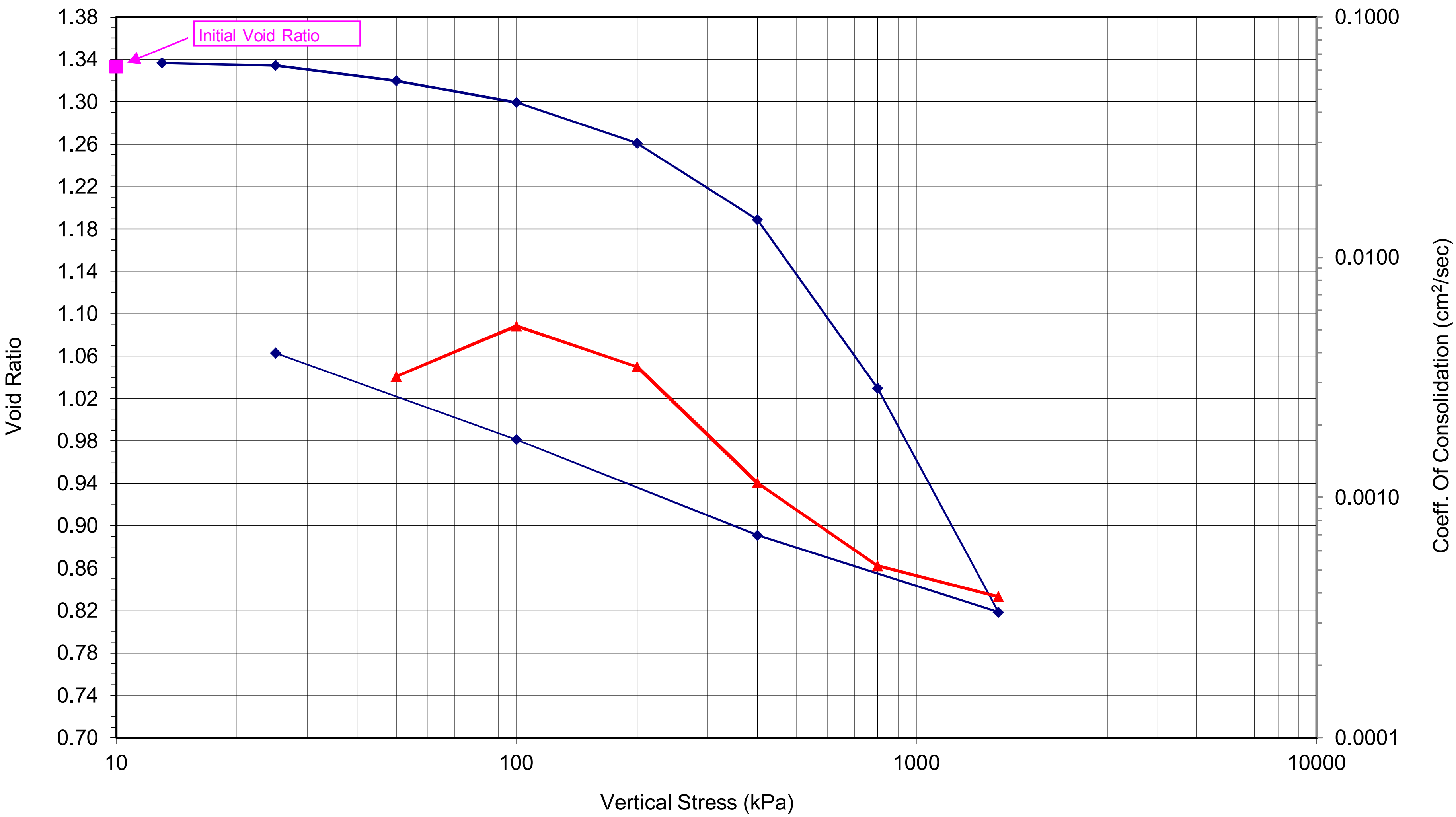
THURBER

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3.-280

MR14-106F, Sa. 3B, 8.5 m / El. 920.2 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 19 - 26, 2014

Initial Water Content =	43.4	%	e_0 =	1.333	LL =	64	%
Final Water Content =	43.3	%	Gs =	2.86	PL =	23	%
					PI =	41	%

Void Ratio (end of load increment) Vs Log of Pressure

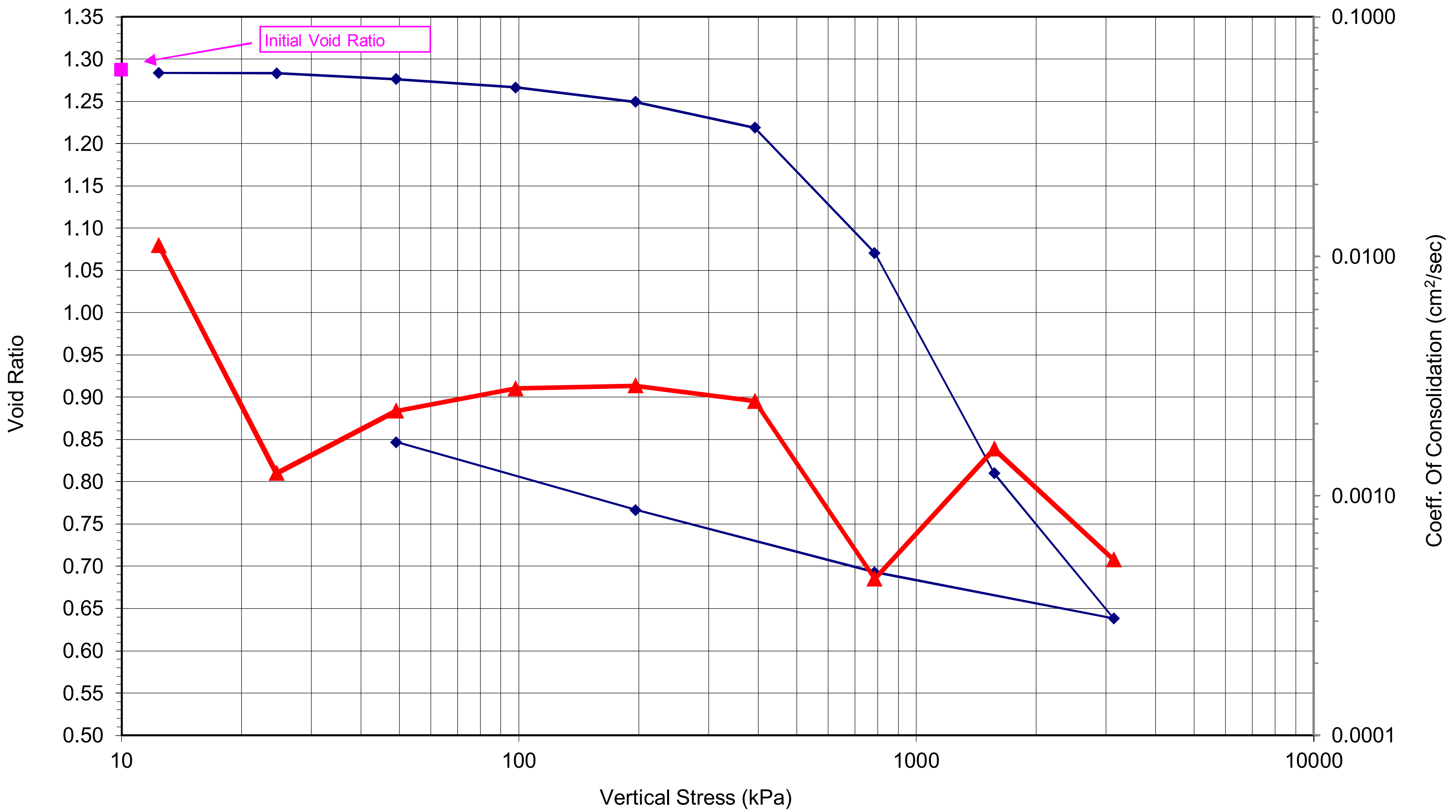


ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

THURBER

Mount Polley Review Panel			MR14-106G, Sa. 3A, 8.3 m / El. 920.4 m				
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014				
File Number: 15-3-280			Test Dates: Nov. 21 - 28, 2014				
Initial Water Content =	42.6	%	e_0 =	1.286	LL =	57	%
Final Water Content =	38.6	%	Gs =	2.86	PL =	23	%
					PI =	24	%

Void Ratio (end of load increment) Vs Log of Pressure



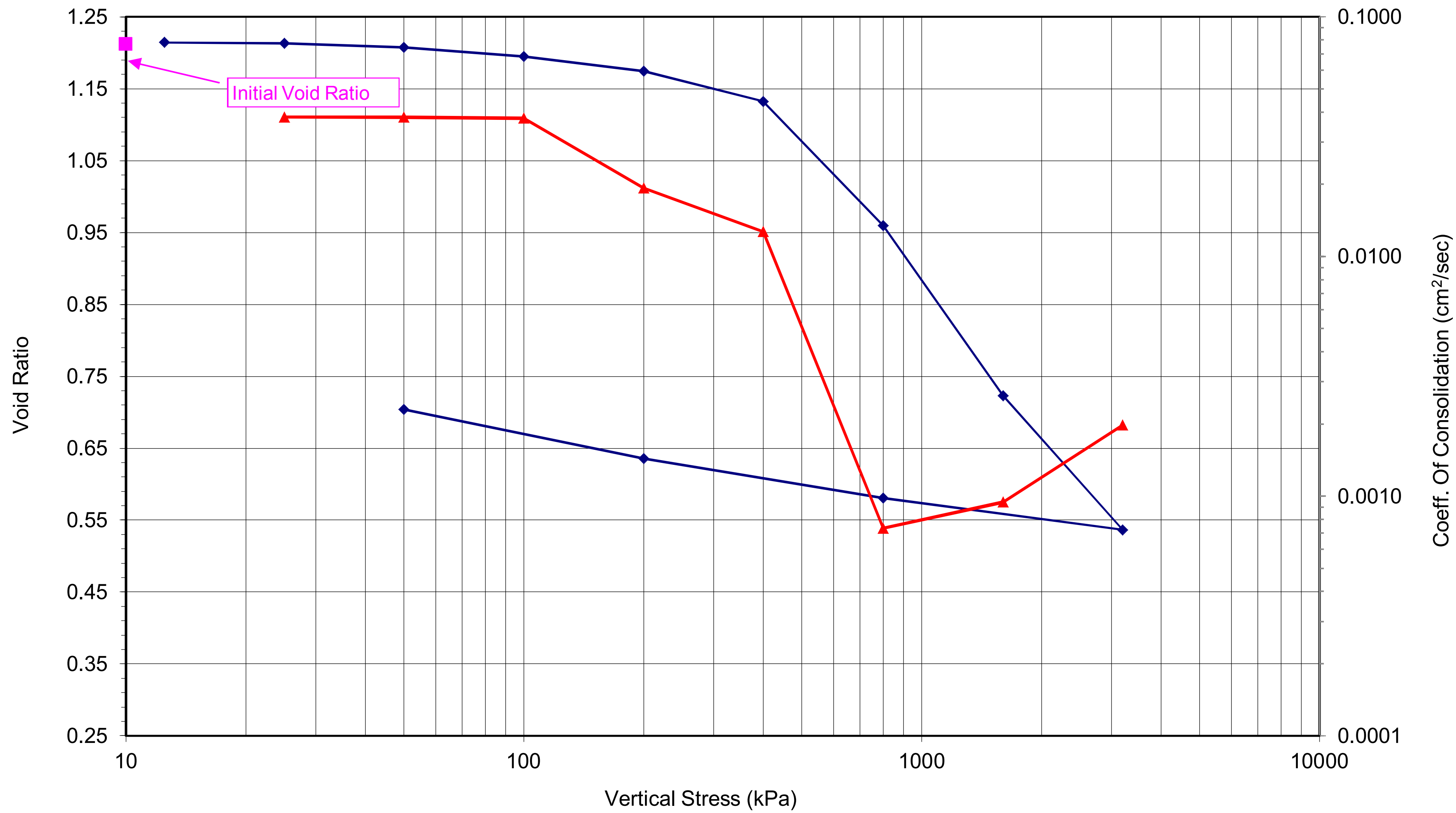
ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-106H, Sa. 1B, 7.5 m / El. 921.1 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 18 -26 , 2014

Initial Water Content =	40.8	%	e_0 =	1.212	LL =	56	%
Final Water Content =	100.5	%	Gs =	2.86	PL =	20	%
					PI =	36	%

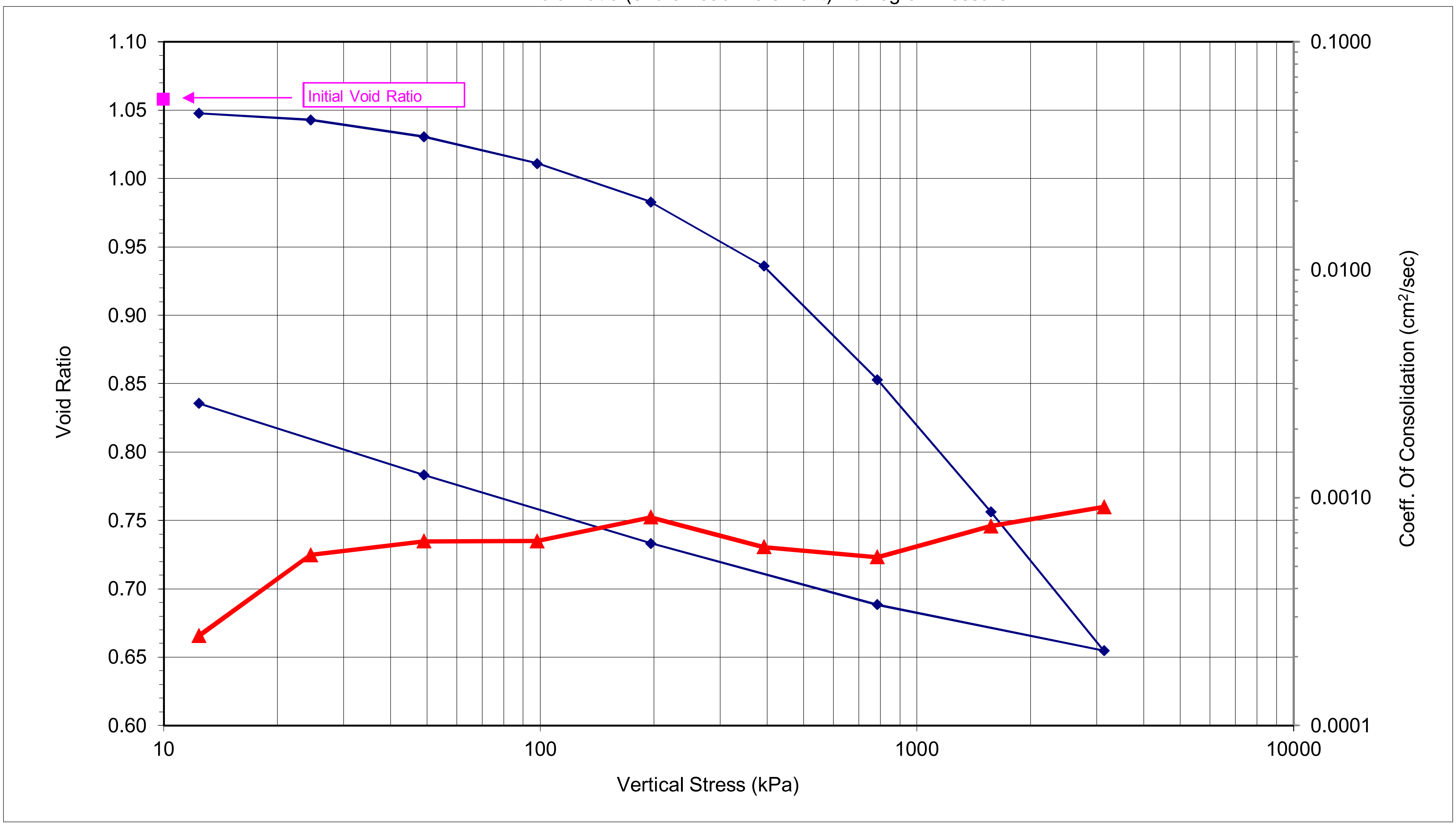
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-107, Sa. 6C, 7.1 m / El. 921.6 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014					
File Number: 15-3-280			Test Dates: Nov. 5 - 13, 2014					
Initial Water Content =	34.8	%	e_0 =	1.058	LL =	47	%
Final Water Content =	27.3	%	Gs =	2.86	PL =	24	%
					PI =	23	%

Void Ratio (end of load increment) Vs Log of Pressure

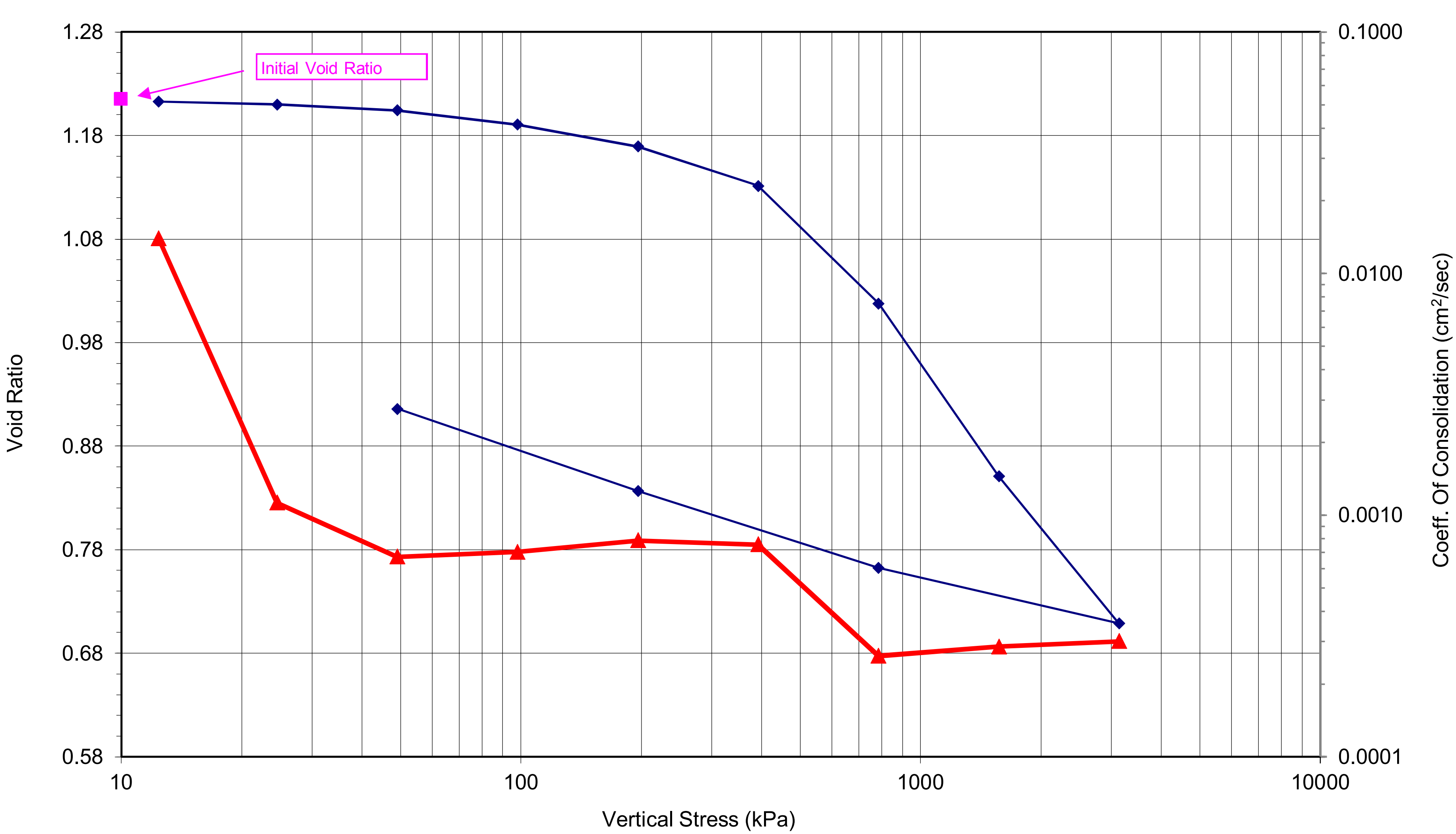


ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

THURBER

Mount Polley Review Panel		MR14-107A, Sa. 1B, 7.3 m / El. 920.9 m	
Mount Polley Tailings Storage Facility Breach		Report Date: Dec. 12, 2014	
File Number: 15-3-280		Test Dates: Dec. 1 - 8, 2014	
Initial Water Content = 39.6 %		e_0 = 1.215	LL = 46 %
Final Water Content = 33.8 %		Gs = 2.86	PL = 21 %
			PI = 25 %

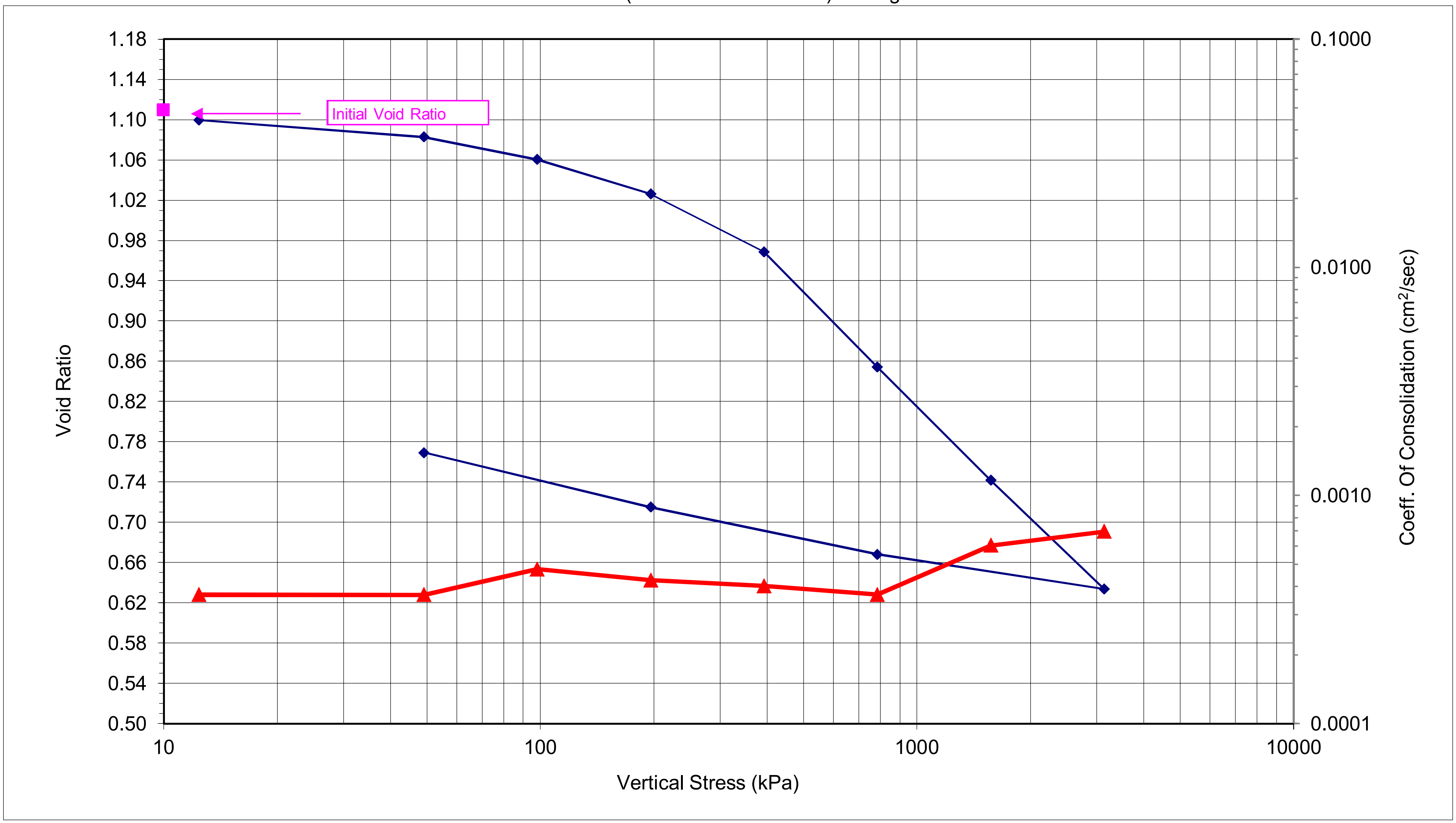
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-107B, Sa. 1B, 6.9 m / El. 921.5 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec 1, 2014					
File Number: 15-3-280			Test Dates: Nov. 12 - 20, 2014					
Initial Water Content =	32.5	%	e_0 =	1.109	LL =	49	%
Final Water Content =	28.5	%	Gs =	2.86	PL =	20	%
					PI =	29	%

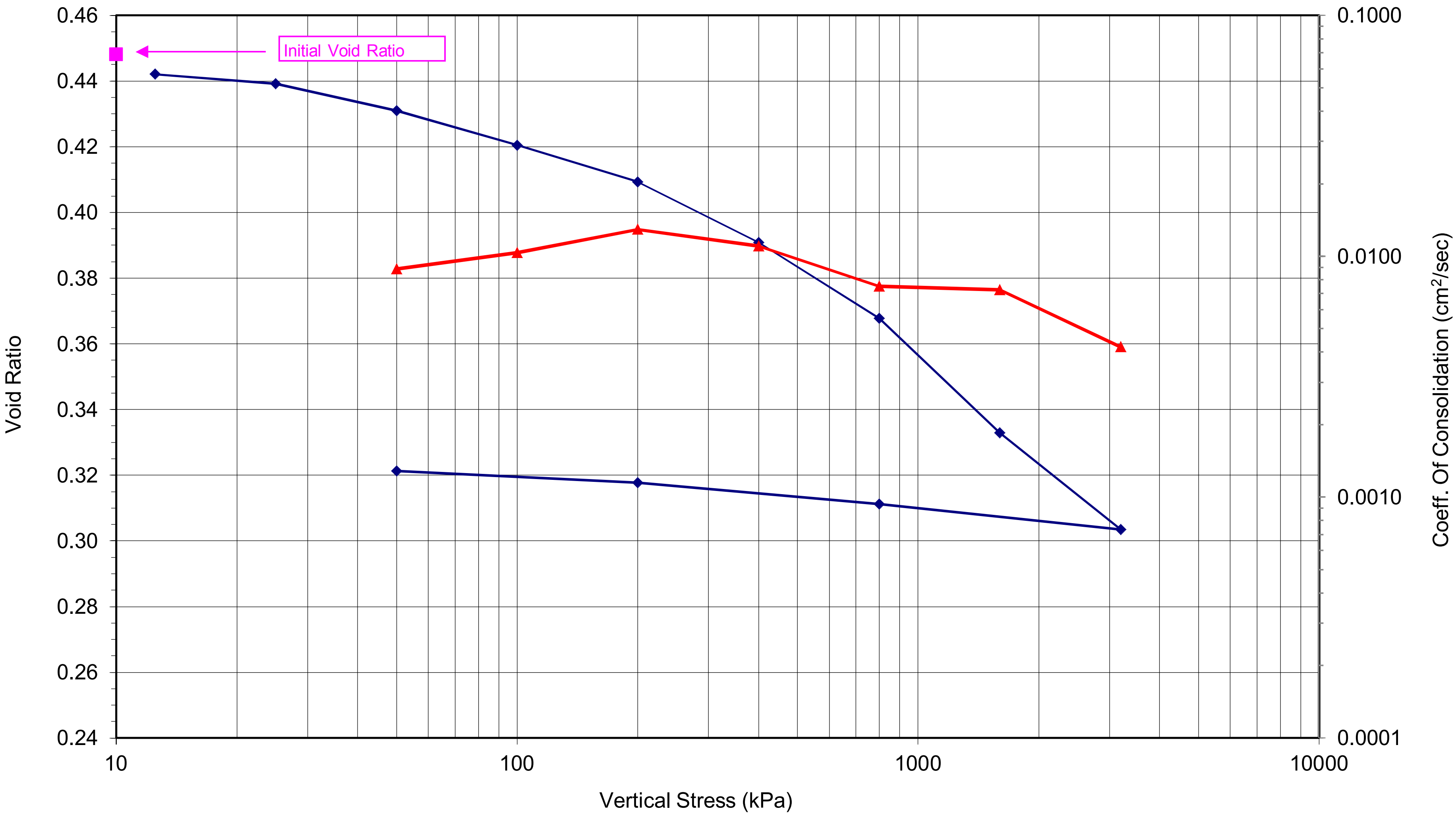
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-105, Sa. 10B, 11.2 m / El. 920.5 m				
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014				
File Number: 15-3.-280			Test Dates: Nov. 4 to 11, 2014				
Initial Water Content =	12.9	%	e_0 =	0.448	LL =	21	%
Final Water Content =	10.8	%	Gs =	2.78	PL =	13	%
					PI =	8	%

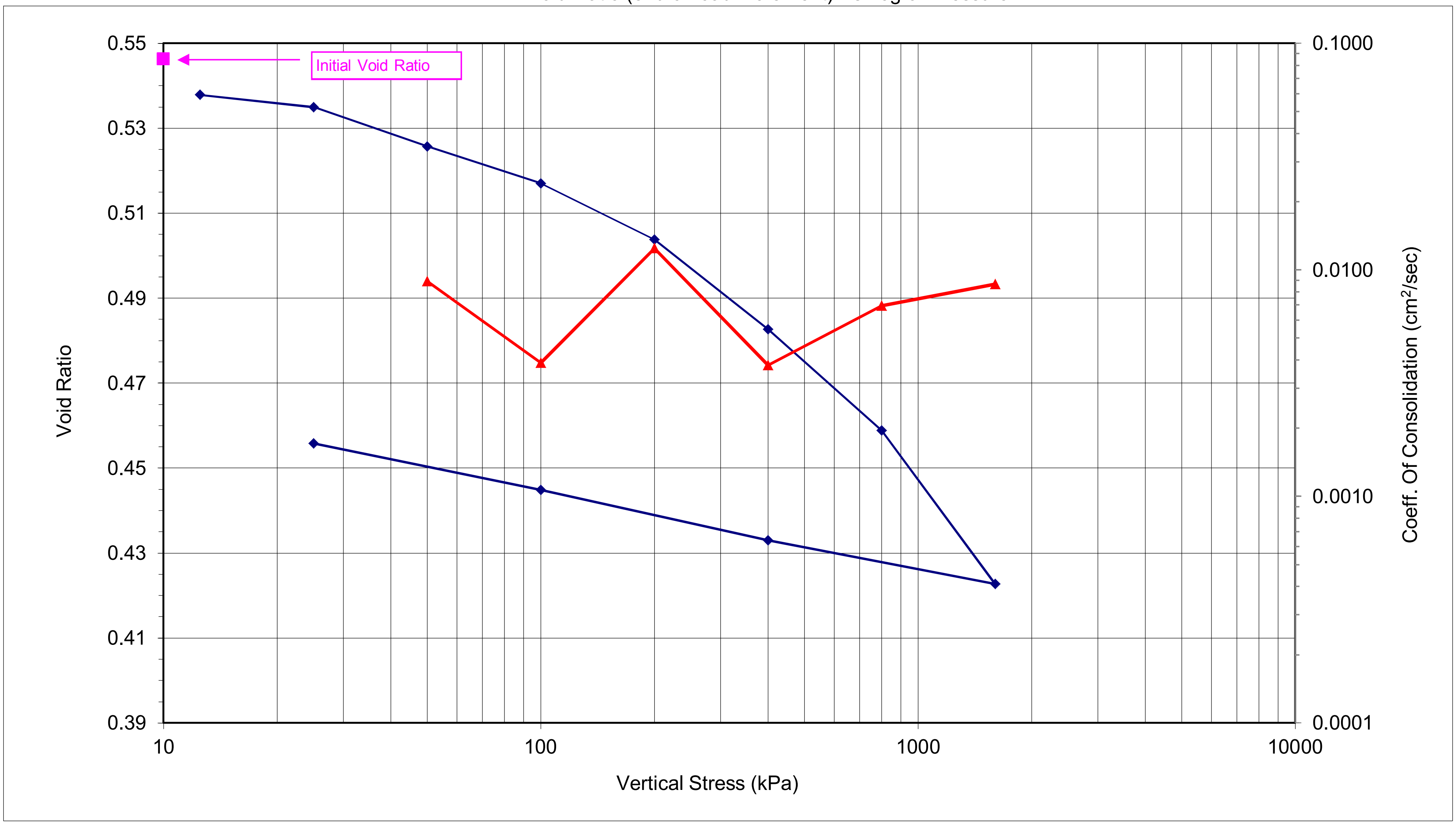
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-113, Sa. 6C, 9.4 m / El. 920.0 m			
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014			
File Number: 15-3.-280			Test Dates: Nov. 4 - 11, 2014			
Initial Water Content =	18.7	%	e_0 = 0.546	LL =	28	%
Final Water Content =	17.5	%	Gs = 2.78	PL =	17	%
				PI =	11	%

Void Ratio (end of load increment) Vs Log of Pressure



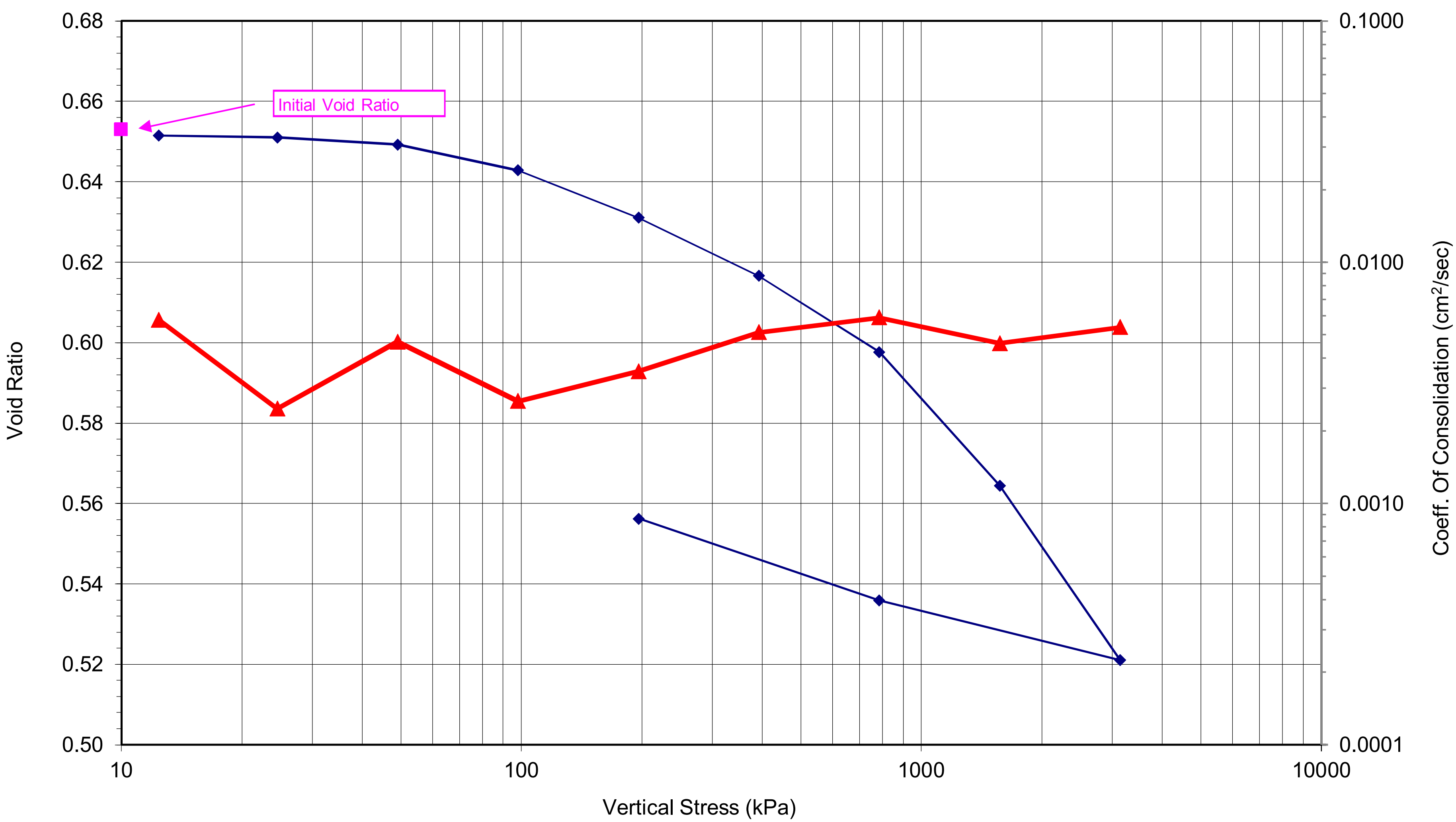
ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

MR14-107A, Sa. 6B, 11.6 m / El. 916.7 m
Report Date: Dec. 12, 2014
Test Dates: Nov. 25 - 29, 2014

Initial Water Content =	22.0	%	e_0 =	0.653	LL =	40	%
Final Water Content =	21.8	%	Gs =	2.78	PL =	25	%
					PI =	15	%

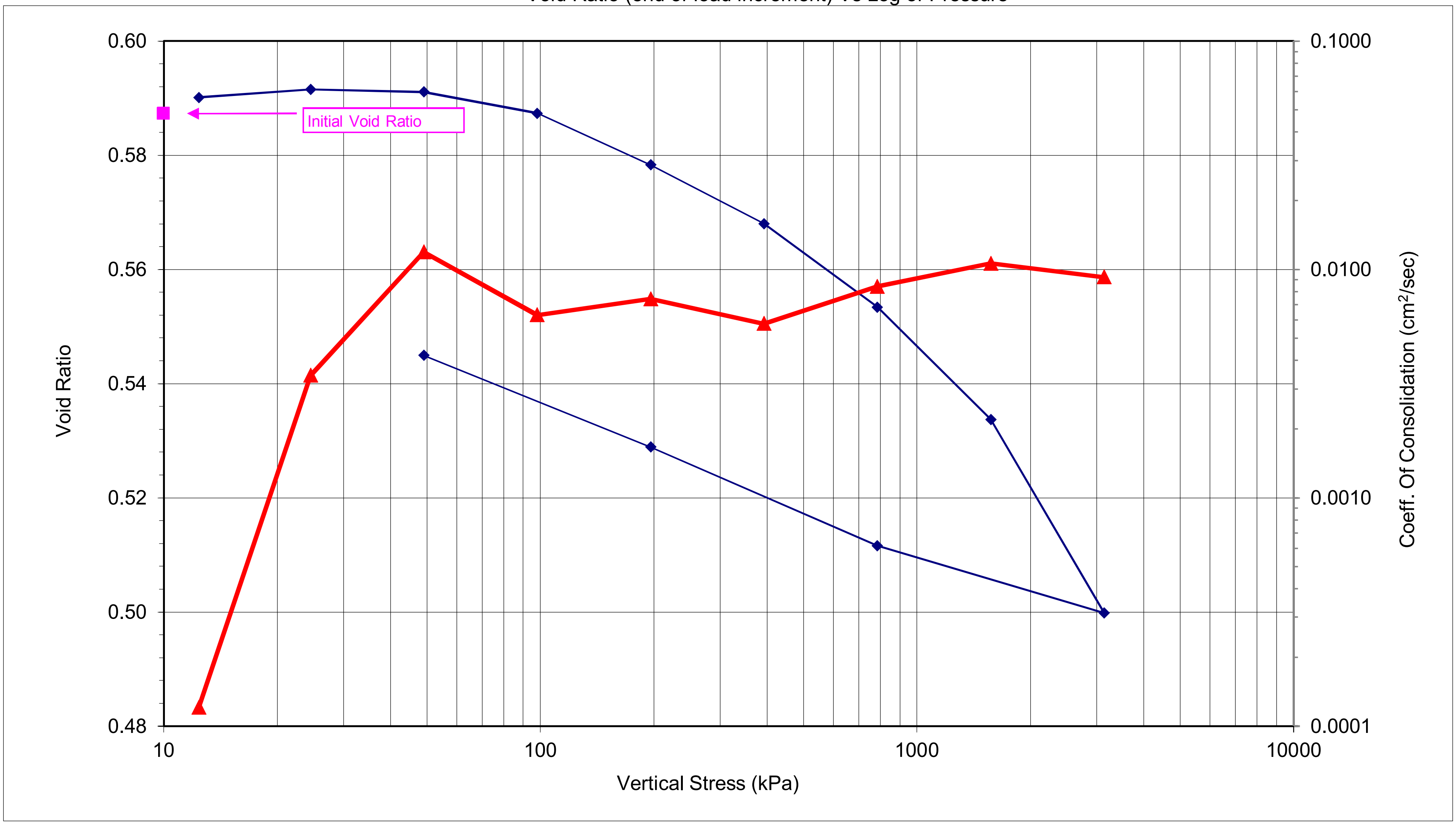
Void Ratio (end of load increment) Vs Log of Pressure



ONE DIMENSIONAL CONSOLIDATION TEST REPORT
TEST SUMMARY PLOT

Mount Polley Review Panel			MR14-110, Sa. 6B, 12.4 m / El. 916.3 m					
Mount Polley Tailings Storage Facility Breach			Report Date: Dec. 12, 2014					
File Number: 15-3-280			Test Dates: Nov. 5 - 10, 2014					
Initial Water Content =	17.2	%	e_0 =	0.587	LL =	36	%
Final Water Content =	20.4	%	Gs =	2.78	PL =	23	%
					PI =	13	%

Void Ratio (end of load increment) Vs Log of Pressure



Appendix E
Attachment 3
Direct Shear Test Data

THURBER

DIRECT SHEAR TEST REPORT DS 14-1
MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
300 kPa

Mount Polley Review Panel — Report Date: Nov. 28, 2014
Mount Polley Tailings Storage Facility Breach — File Number: 15-3-280

SAMPLE DESCRIPTION
CLAY (CH), grey, stiff, thinly bedded

	Start of Test	After Consolidation
Wet Density (kg/cu.m.):	1,838	1,881
Dry Density (kg/cu.m.):	1,325	1,384
Moisture Content:	38.2%	35.9%
Void Ratio:	1.076	0.987
Saturation:	99.0%	100%
Specific Gravity (assumed):	2.75	

AFTER TEST NOTES

NORMAL STRESS (kPa)	RESIDUAL SHEAR STRESS (kPa)
300	87
150	56
450	130

Moisture content taken from center of specimen = 31.2%

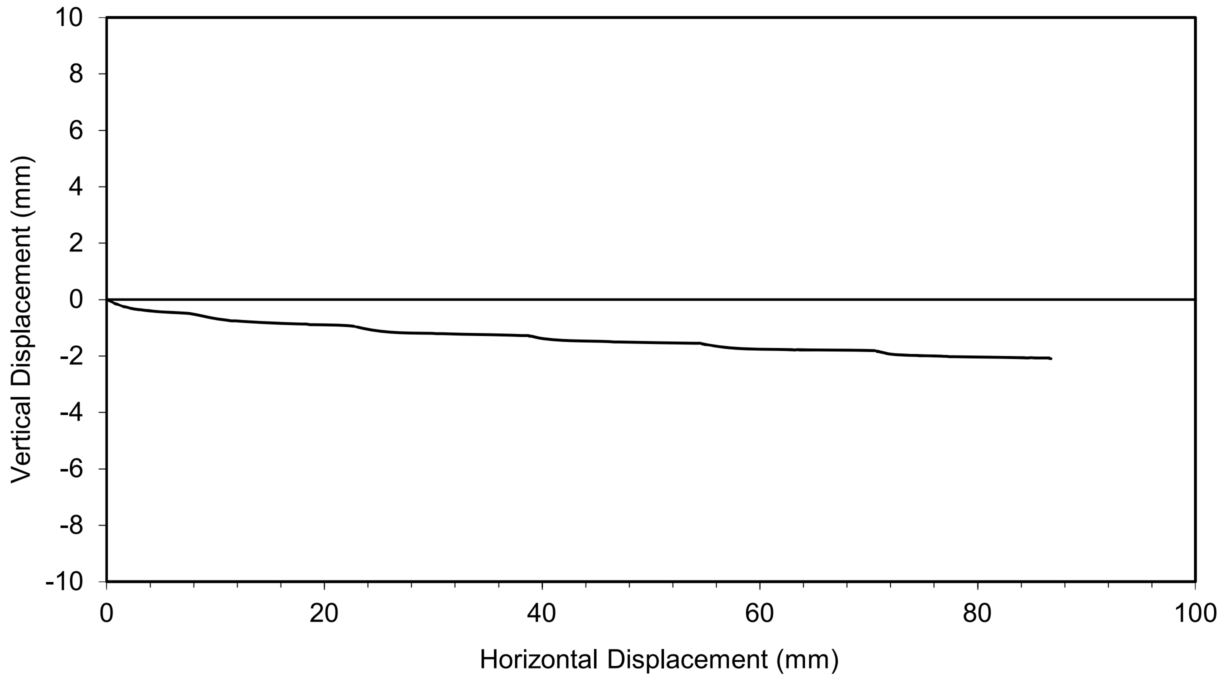
There was a large amount of extruded silty, clay between the shearbox halves.

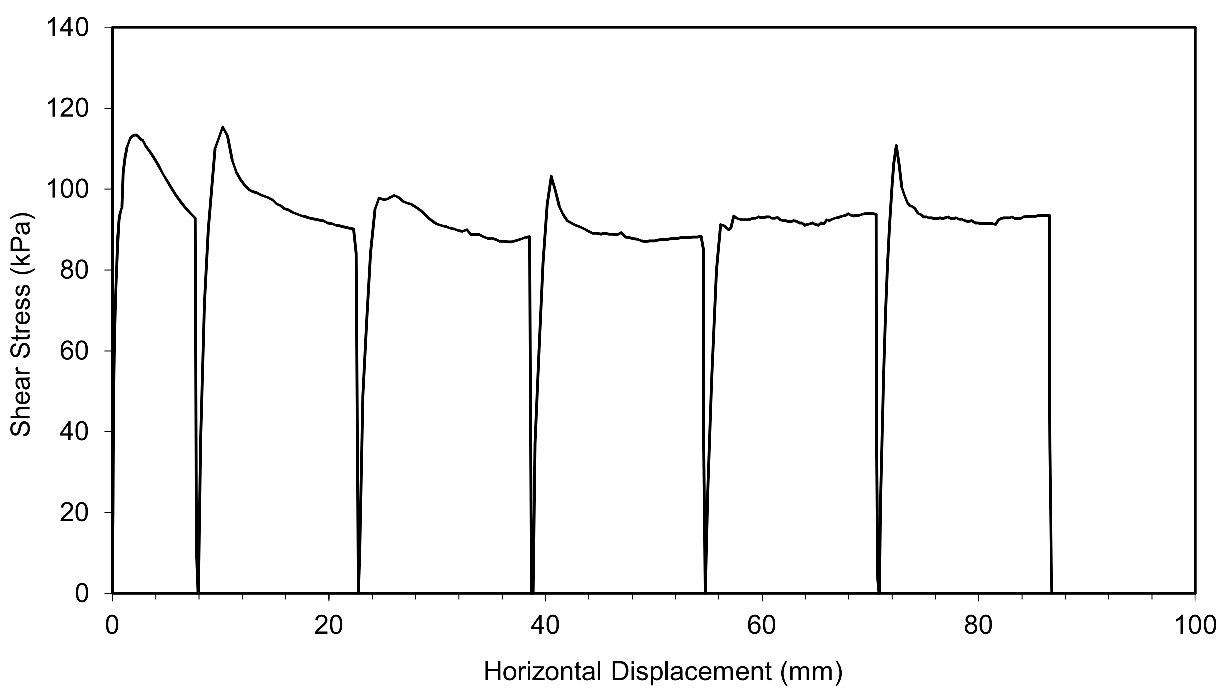
The top cap was level and there was no misalignment of the shearbox halves.

The specimen did not separate along the shear surface.

THURBER

DIRECT SHEAR TEST REPORT DS 14-1



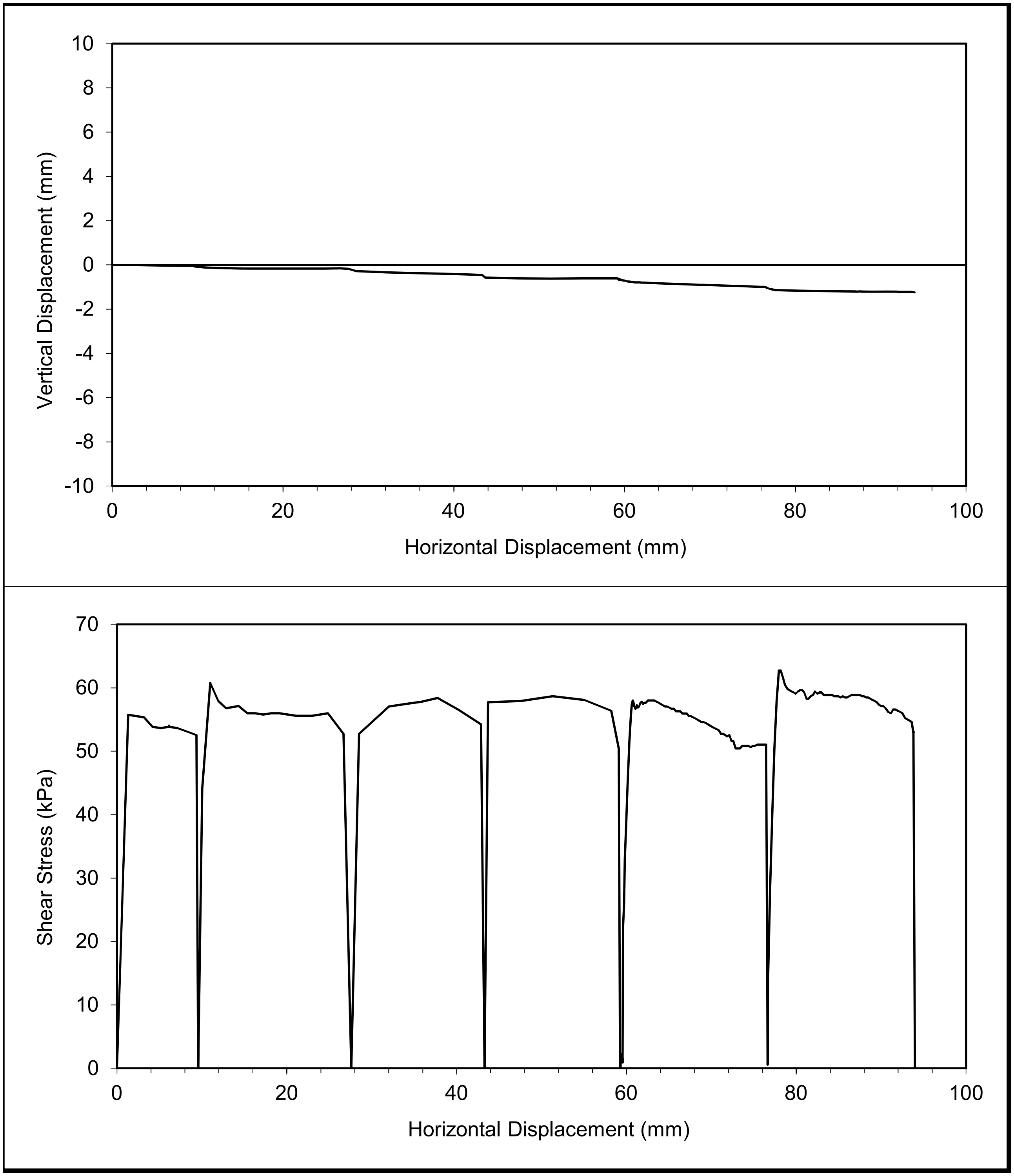


Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

Sample: MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
Normal Stress = 300 kPa
Test Dates: Nov. 18 - 26, 2014

THURBER

DIRECT SHEAR TEST REPORT DS 14-1

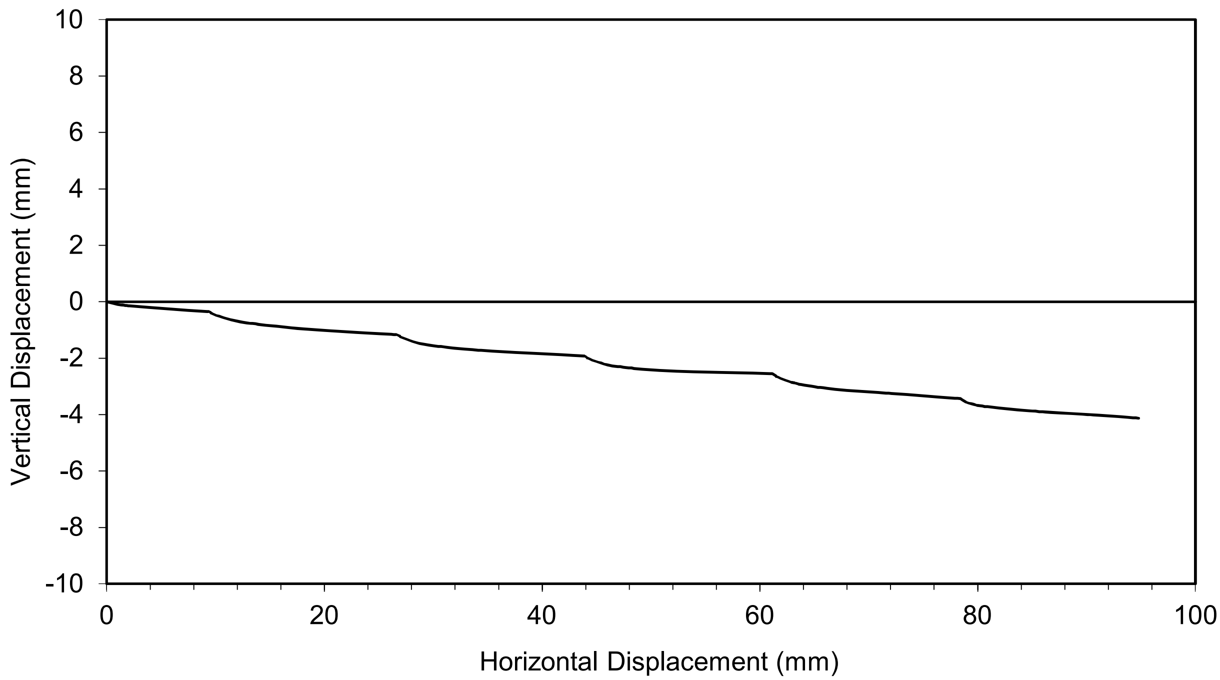


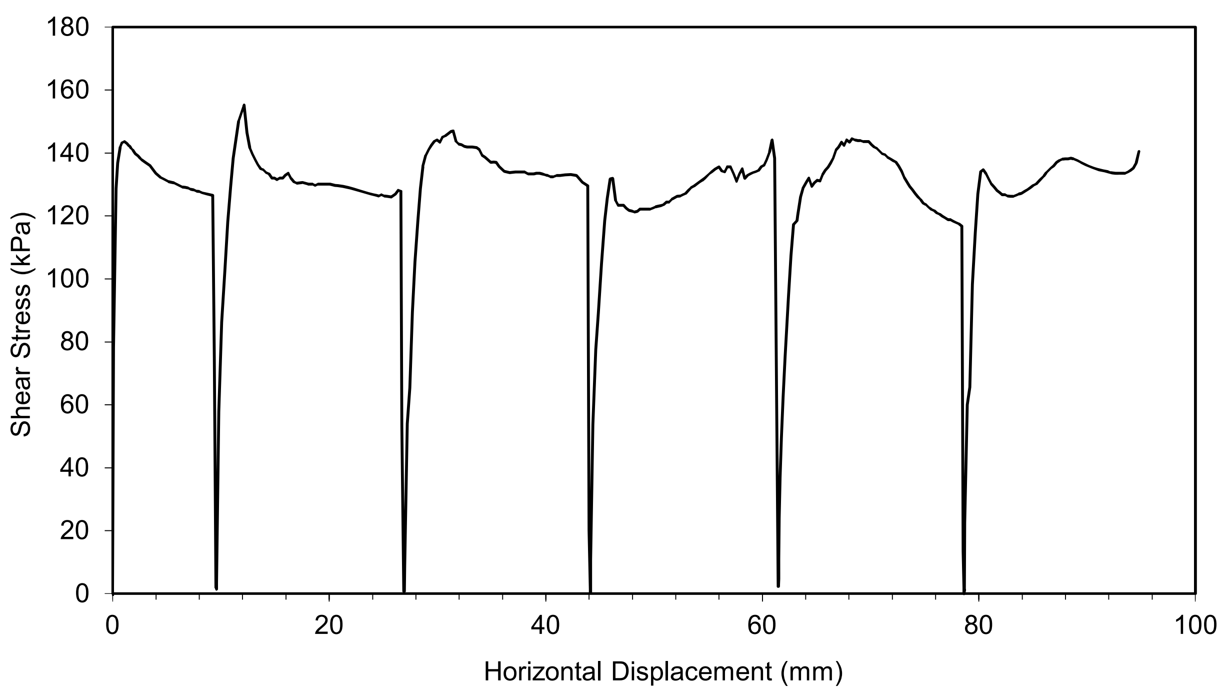
Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

Sample: MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
Normal Stress = 150 kPa
Test Dates: Nov. 18 - 26, 2014

THURBER

DIRECT SHEAR TEST REPORT DS 14-1





Mount Polley Review Panel	Sample: MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
Mount Polley Tailings Storage Facility Breach	Normal Stress = 450 kPa
File Number: 15-3-280	Test Dates: Nov. 18 - 26, 2014

THURBER

DIRECT SHEAR TEST REPORT DS 14-1
MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
Normal Stress = 150, 300, 450 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov. 28, 2014
File Number: 15-3-280

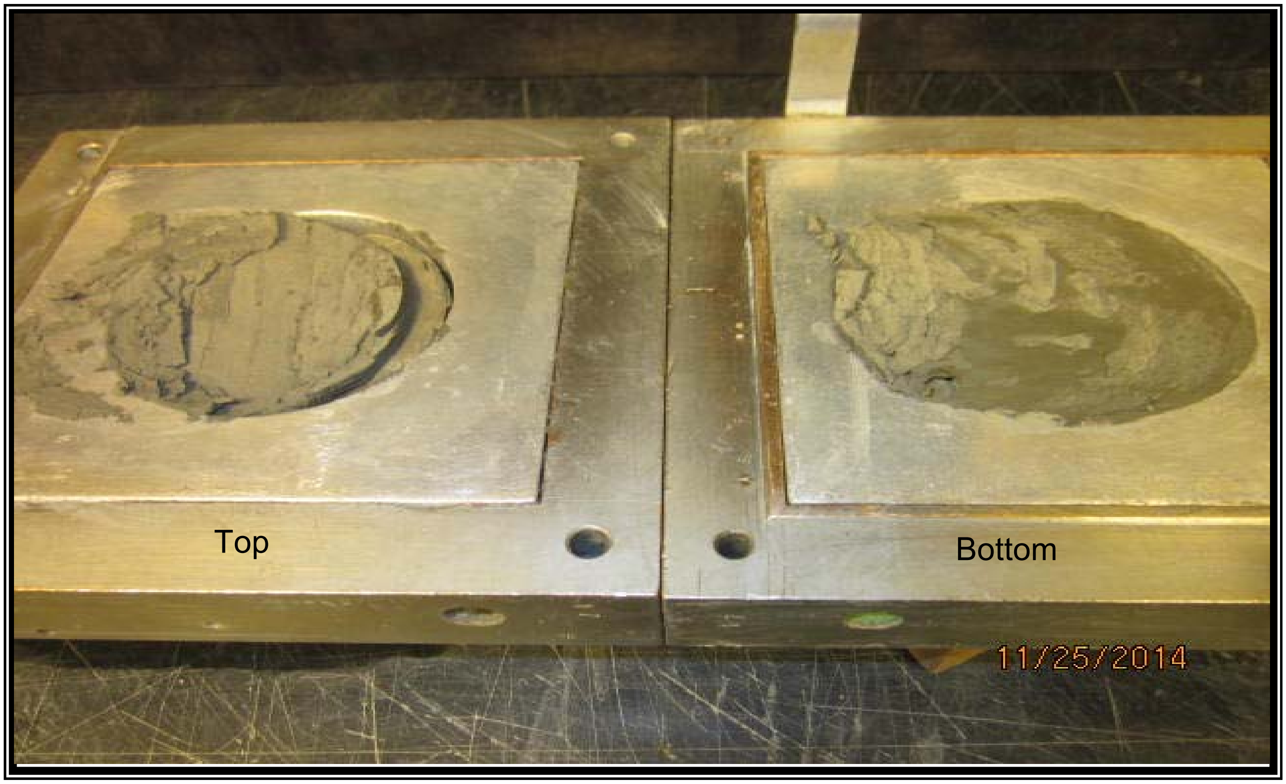


PHOTO OF SHEAR PLANE AFTER TEST

TEST MACHINE

Wykeham Farrance direct shear test apparatus with a 60 mm diameter round shear box. Vertical and horizontal strains were measured by ellectonic displacement transducers. The shear stress was measured with an electronic load cell. The normal force was applied by dead weights on a

TEST PROCEDURE

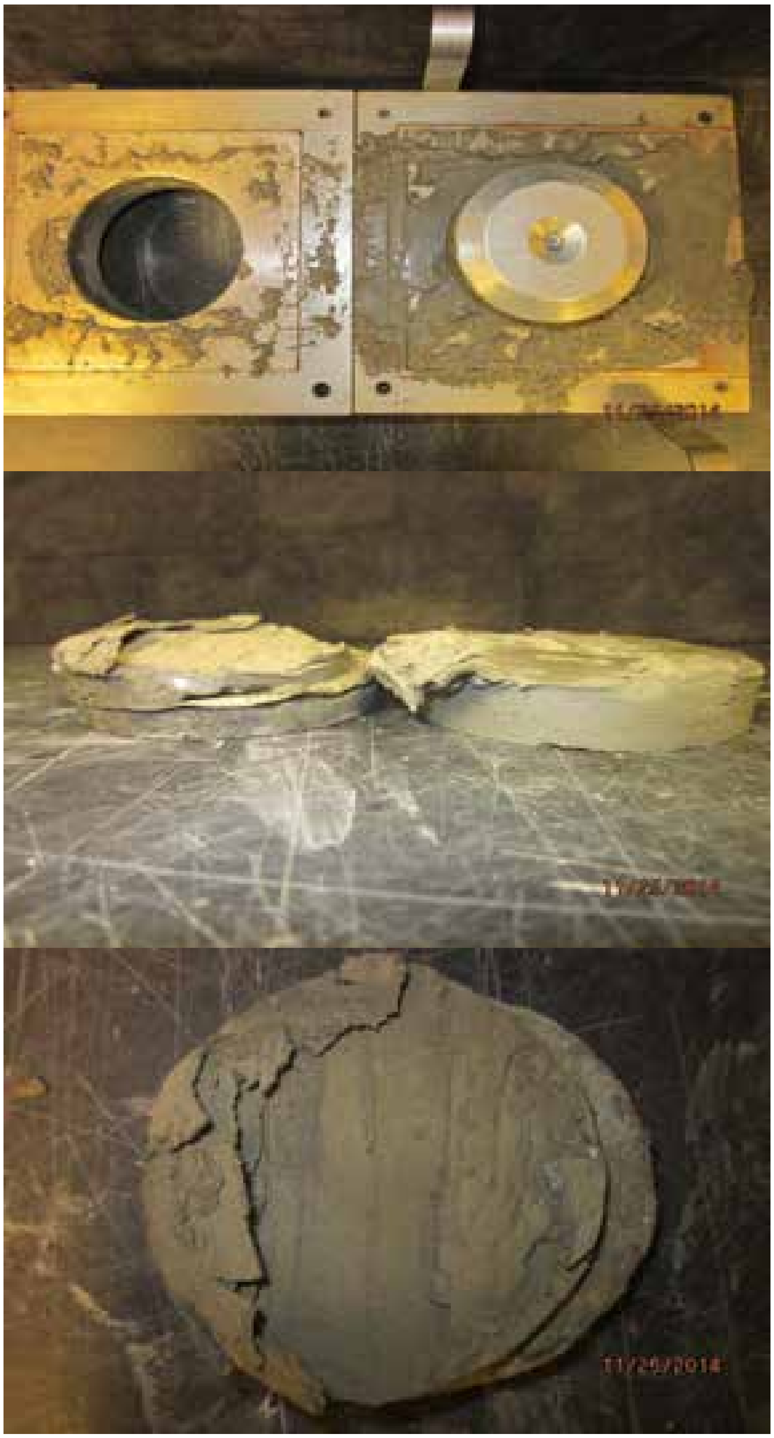
- The test specimen was manually trimmed from a Shelby tube sample.
- The shear plane was pre-cut with a knife prior to placement in the shearbox.
- The specimen was consolidated in two stages to the required normal stress. First to 100 kPa and then to 300 kPa.
- The first four cycles of horizontal displacement (0 - 57 mm) were run at .12 mm/min.
- The final two cycles (57 - mm) were run at .024 mm/min.
- The specimen was unloaded to a normal stress of 150 kPa.
- Four cycles were run at .12 mm/min and two at .024 mm/min.
- The specimen was loaded to a normal stress of 450 kPa.
- Four cycles were run at .12 mm/min and two at .024 mm/min.

THURBER

DIRECT SHEAR TEST REPORT DS 14-1
MR14-106H, Sa.1B, 7.4 m / El. 921.2 m
Normal Stress = 150, 300, 450 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov. 28, 2014
File Number: 15-3-280



Top

Bottom

THURBER

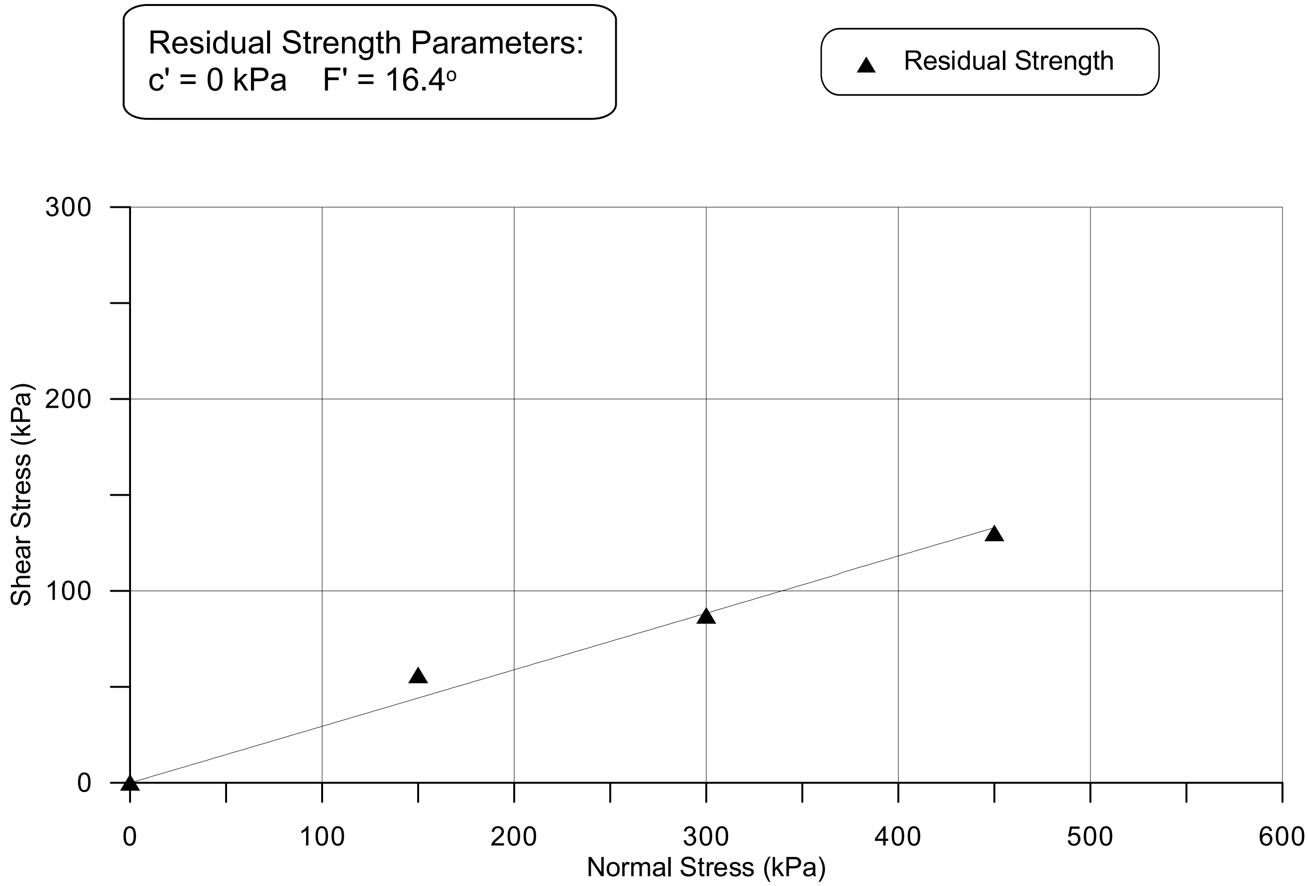
Direct Shear Test Results

Client: Mt. Polley Review Panel
Project: Mt. Polley Tailings Storage Facility Breach
Job No.: 15-3-280

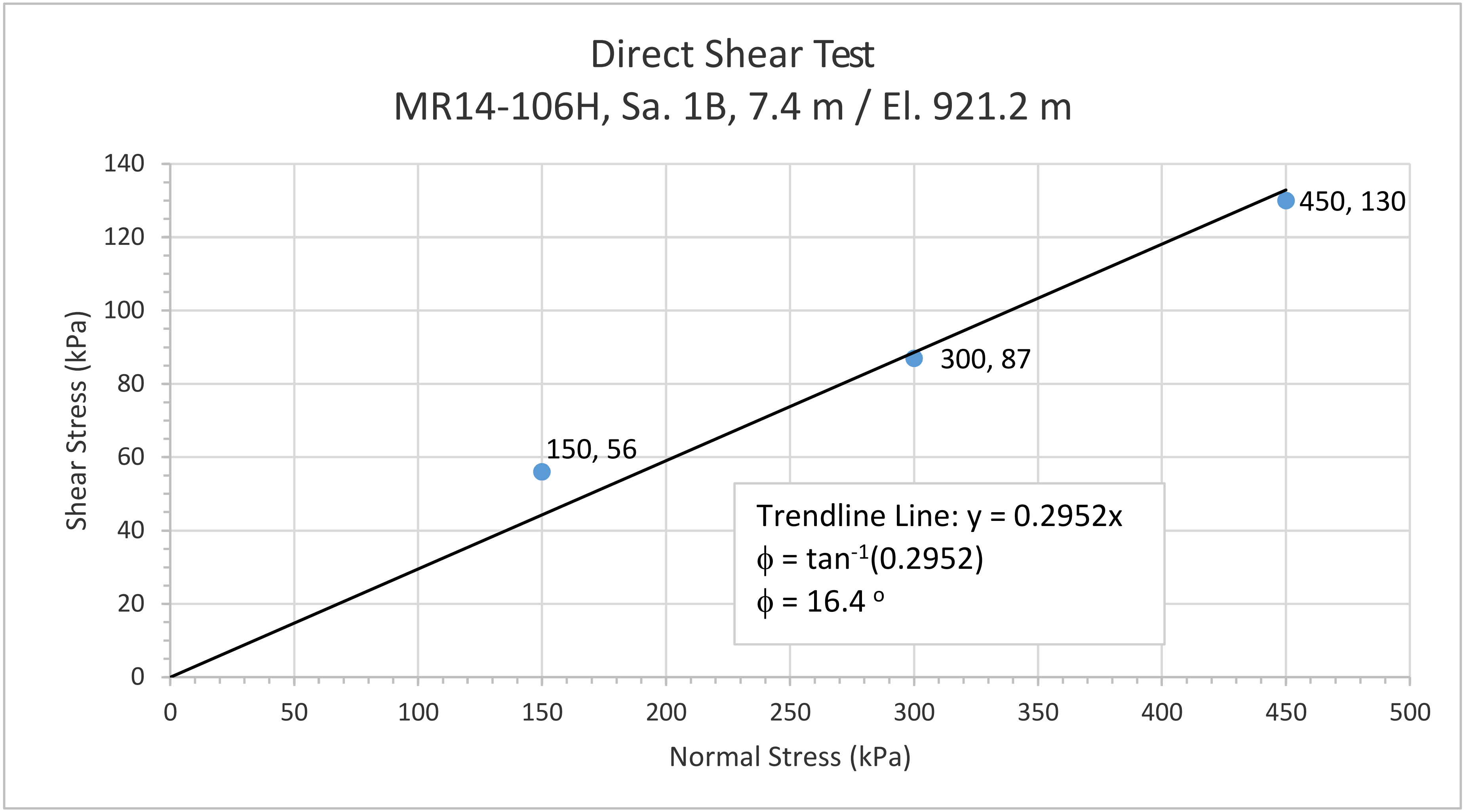
Sample: MR14-106H, Sa.1B
7.4 m / El. 921.2 m
Date: Nov. 28, 2014

Silty CLAY (CL), thinly bedded, stiff, medium plasticity

Residual Strength Parameters:
c' = 0 kPa   F' = 16.4°



Remarks: The direct shear specimen was trimmed from a 73 mm diameter Shelby tube sample. A shear plane was pre-cut through the specimen before it was set up in a direct shear machine. The first stage of shearing was run at a normal stress of 300 kPa. The second stage at 150 kPa and the third at 450 kPa


Direct Shear Test
MR14-106H, Sa. 1B, 7.4 m / El. 921.2 m
Shear Stress (kPa)
Normal Stress (kPa)
0
20
40
60
80
100
120
140
0
50
100
150
200
250
300
350
400
450
500
150, 56
300, 87
450, 130
Trendline Line: y = 0.2952x
ϕ = tan-1(0.2952)
ϕ = 16.4 o

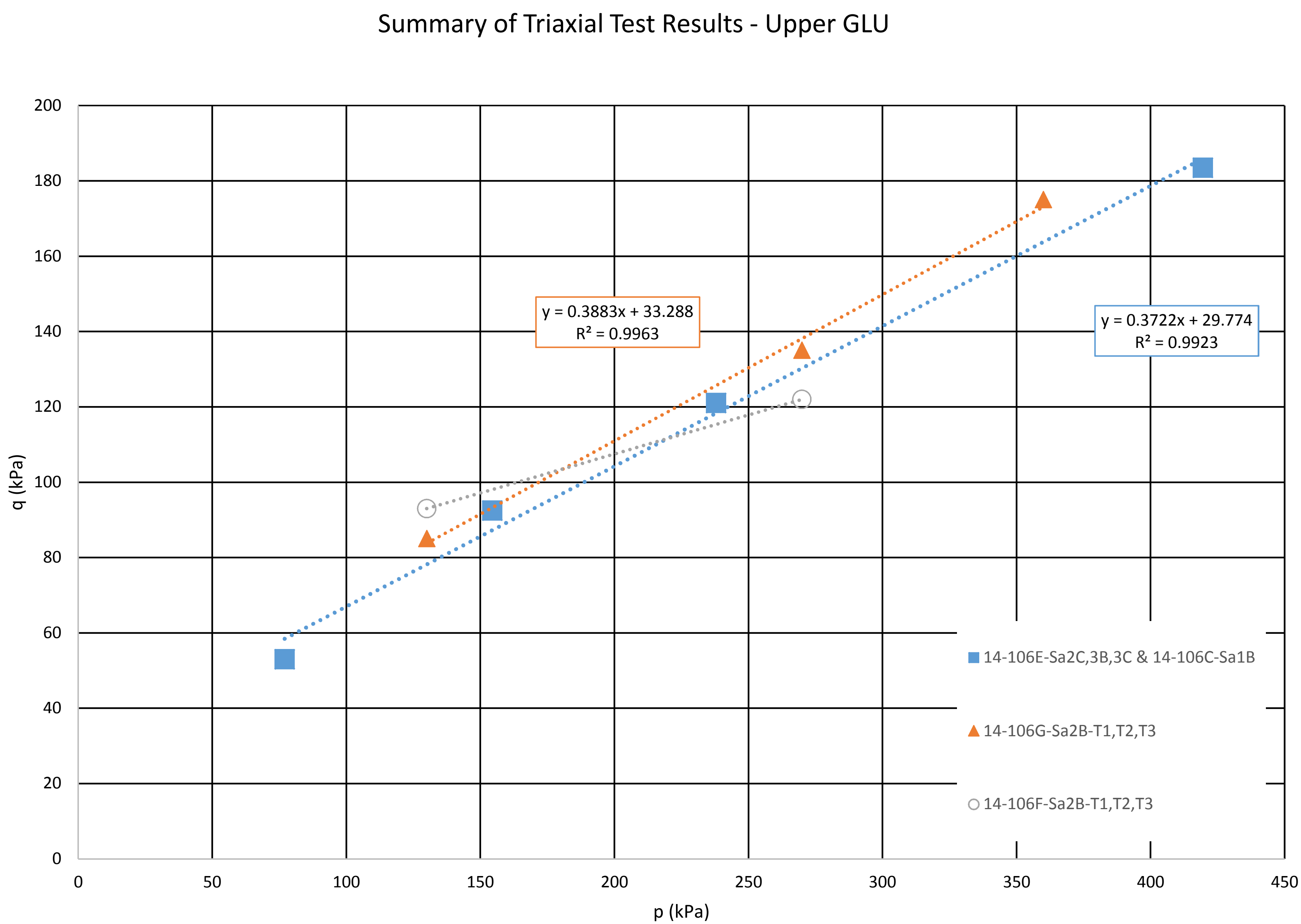
Appendix E
Attachment 4
Triaxial Test Data

Summary of Panel Triaxial Test Data

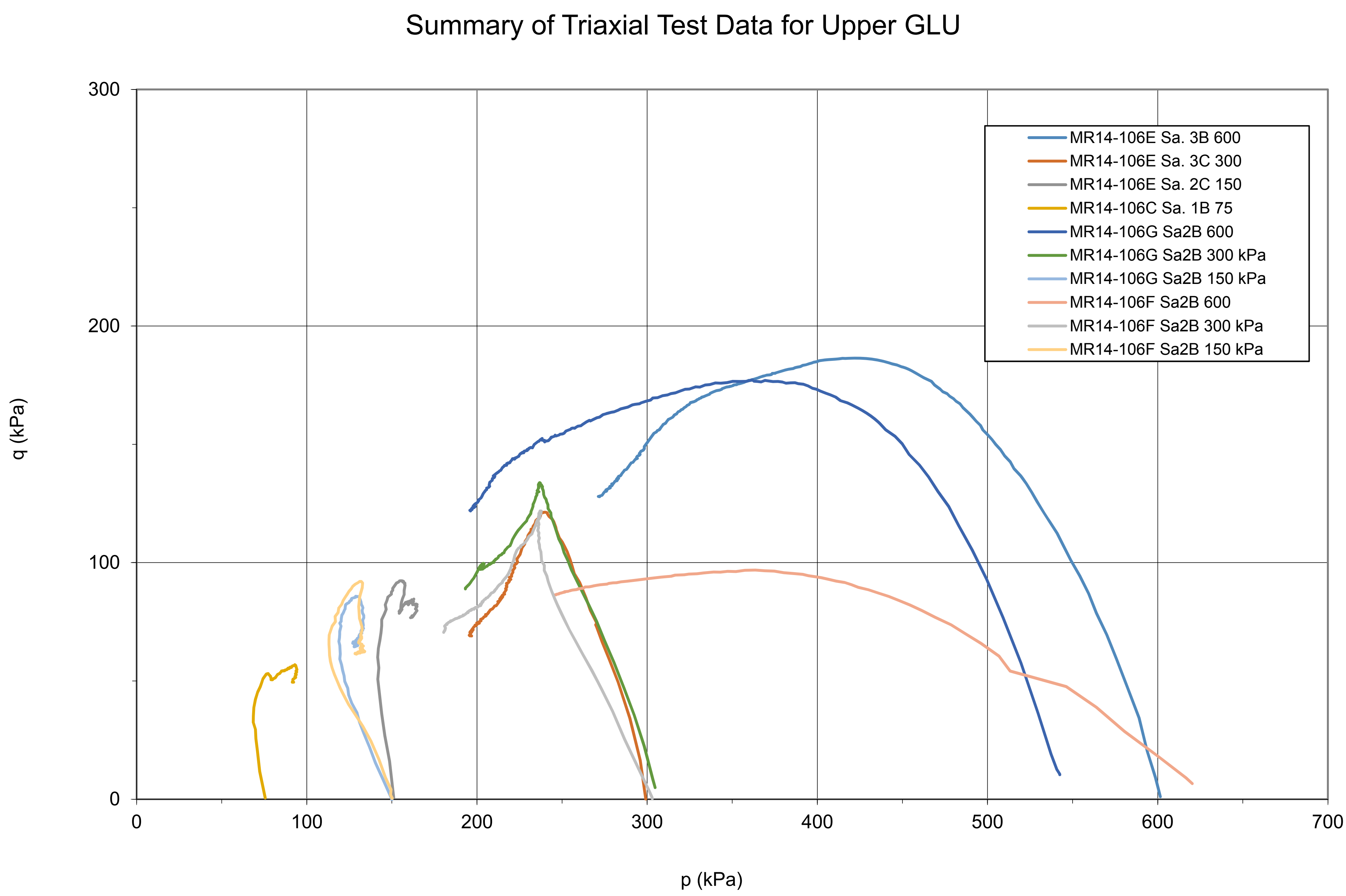
Sample	Depth (m)	Elevation (m)	Soil Unit	W/C (%)	PI	σ'_{3c} (kPa)	Maximum Deviator Stress ($\sigma'_1 - \sigma'_3$) (kPa)	Undrained Shear Strength (kPa)	Excess Pore Pressure at Failure (kPa)	Notes
14-111-Sa5A	5.7	922.7	Upper Till	13	8	600	890	445	265	
14-105-Sa4	3.9	927.8	Upper Till	16	14	600	575	288	367	First specimen compromised during testing, unable to complete test.
14-113-Sa1C	1.4	928.0	Upper Till	20	13	600	448	224	408	
14-106 Sa2	4.8	923.9	Upper Till	12	10	600	639	320	343	
14-106E Sa2C	8.0	921.0	Upper GLU	35	29	150	185	93	88	
14-106E Sa3C	8.8	920.2	Upper GLU	40	33	300	242	121	183	
14-106E Sa3B	8.4	920.6	Upper GLU	40	35	600	367	184	364	
14-106C-Sa1B	7.5	921.0	Upper GLU	39	30	75	106	53	51	
14-106G Sa 2B	7.8	920.9	Upper GLU	38	21	150	170	85	100	
14-106G Sa 2B	8.0	920.7	Upper GLU	34	21	303	270	135	200	
14-106G Sa 2B	8.0	920.7	Upper GLU	39	21	594	350	175	350	
14-106F Sa 2B	8.0	920.8	Upper GLU	30	41	149	186	93	110	
14-106F Sa 2B	8.1	920.7	Upper GLU	42	41	303	244	122	180	
14-106F Sa 2B	8.3	920.5	Upper GLU	38	41	599	N/A	N/A	900	Issues with backpressure system during test.

Sample	Soil Unit	σ'_{3f} (kPa)	σ'_{1f} (kPa)	p = ($\sigma'_1 + \sigma'_3$)/2 (kPa)	q =($\sigma'_1 - \sigma'_3$)/2 (kPa)	Friction Angle (degrees)*	q/σ'_1	Mohr-Coulomb Envelope	
								Cohesion (kPa)	Friction Angle (degrees)
14-111-Sa5A	Upper Till	335	1225	780	445	35^{o}	0.36	N/A	N/A
14-105-Sa4	Upper Till	233	808	521	288	34^{o}	0.36	N/A	N/A
14-113-Sa1C	Upper Till	192	640	416	224	33^{o}	0.35	N/A	N/A
14-106 Sa2	Upper Till	257	896	577	320	34^{o}	0.36	N/A	N/A
14-106E Sa2C	Upper GLU	62	247	155	93	37^{o}	0.37	30	20^{o}
14-106E Sa3C	Upper GLU	117	359	238	121	31^{o}	0.34		
14-106E Sa3B	Upper GLU	236	603	420	184	26^{o}	0.30		
14-106C-Sa1B	Upper GLU	24	130	77	53	43^{o}	0.41		
14-106G Sa 2B	Upper GLU	50	220	130	85	41^{o}	0.39	33	21^{o}
14-106G Sa 2B	Upper GLU	103	373	270	135	30^{o}	0.36		
14-106G Sa 2B	Upper GLU	244	594	360	175	29^{o}	0.29		
14-106F Sa 2B	Upper GLU	39	225	130	93	46^{o}	0.41	N/A	N/A
14-106F Sa 2B	Upper GLU	123	367	270	122	27^{o}	0.33		
14-106F Sa 2B	Upper GLU	N/A	N/A	N/A	N/A	N/A	N/A		

*For the purpose of estimating the peak friction angle of this specimen the cohesion was assumed equal to zero.



Summary of Triaxial Test Results - Upper GLU
y = 0.3883x + 33.288
R² = 0.9963
y = 0.3722x + 29.774
R² = 0.9923
q (kPa)
p (kPa)
0
20
40
60
80
100
120
140
160
180
200
0
50
100
150
200
250
300
350
400
450
14-106E-Sa2C,3B,3C & 14-106C-Sa1B
14-106G-Sa2B-T1,T2,T3
14-106F-Sa2B-T1,T2,T3


Summary of Triaxial Test Data for Upper GLU
q (kPa)
p (kPa)
300
200
100
0
0
100
200
300
400
500
600
700
MR14-106E Sa. 3B 600
MR14-106E Sa. 3C 300
MR14-106E Sa. 2C 150
MR14-106C Sa. 1B 75
MR14-106G Sa2B 600
MR14-106G Sa2B 300 kPa
MR14-106G Sa2B 150 kPa
MR14-106F Sa2B 600
MR14-106F Sa2B 300 kPa
MR14-106F Sa2B 150 kPa

PANEL COMMENT
SOIL UNIT: UPPER TILL

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-2B

MR14-105, Sa. 4B, 3.9 m / El. 927.7 m

Effective Confining Pressure = 600 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov. 23, 2014
File Number: 15-3-280
Test Dates: Nov. 15 - 21, 2014

Index Testing Data

Gravel:	10.2%	Liquid Limit:	28
Sand:	41.3%	Plastic Limit:	14
Silt:	31.3%	Plasticity Index:	14
Clay:	17.2%	Sp. Gr. (assumed):	2.78

Clayey SAND (SC), trace to some gravel, low plastic fines

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	2,217	2,285
Dry Density (kg/cu.m.):	1,919	2,008
Moisture Content:	15.5%	13.8%
Void Ratio:	0.447	0.383
Saturation:	96%	100%
Pore Press. Parameter B:	0.50	0.98

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	4.14	19.67
Stress Ratio:	3.70	3.44
Deviator Stress (kPa):	495	575
Change in Pore Pressure (kPa):	418	367
Effective Confining Pressure (kPa):	184	235
Pore Pressure Parameter A:	0.84	0.64
Rate of Displacement (%/hour):	0.83	0.83

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-2B
MR14-105, Sa. 4B, 3.9 m / El. 927.7 m
Effective Confining Pressure = 600 kPa

Original Sample

The original Shelby tube sample was a 530 mm long by 73 mm diameter. The specimen was trimmed at 70 - 245 mm from the top of the sample.

Test Specimen

The ends of the sample were manually trimmed. The length of the test specimen was 155.08 mm and the diameter was 72.09 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

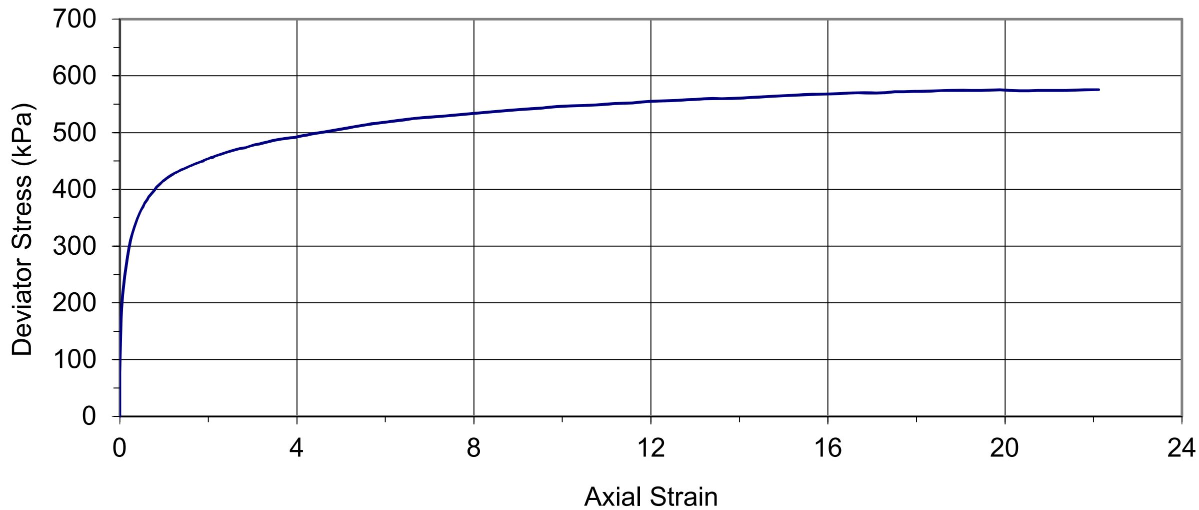
An initial cell pressure of 100 kPa resulted in a pore pressure response of 66 kPa (B=0.66). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.98 (at 550 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 600 kPa. During the first stage the sample was consolidated to an effective confining pressure of 200 kPa. For the second stage the sample was consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

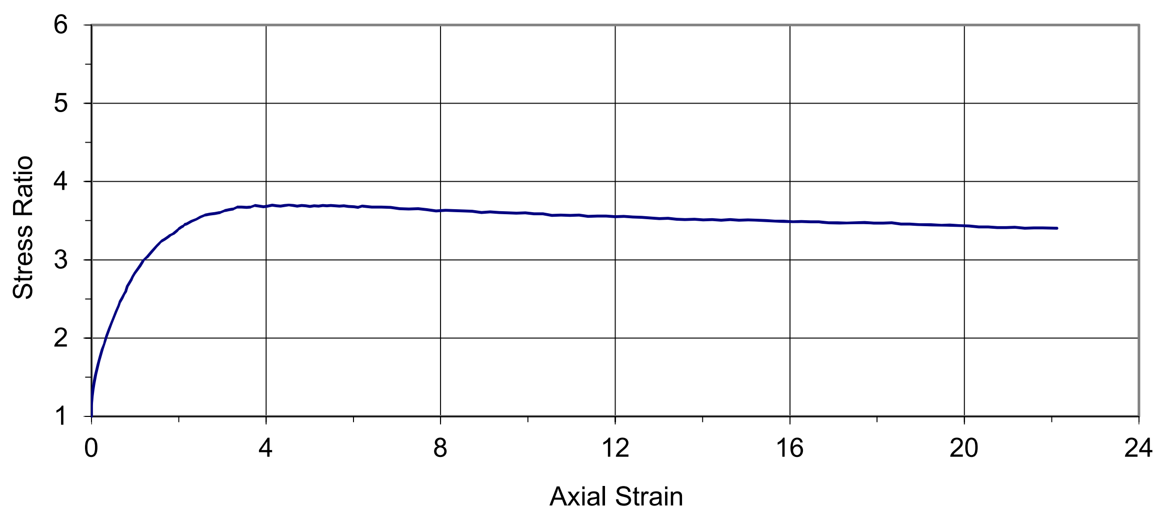
After Test

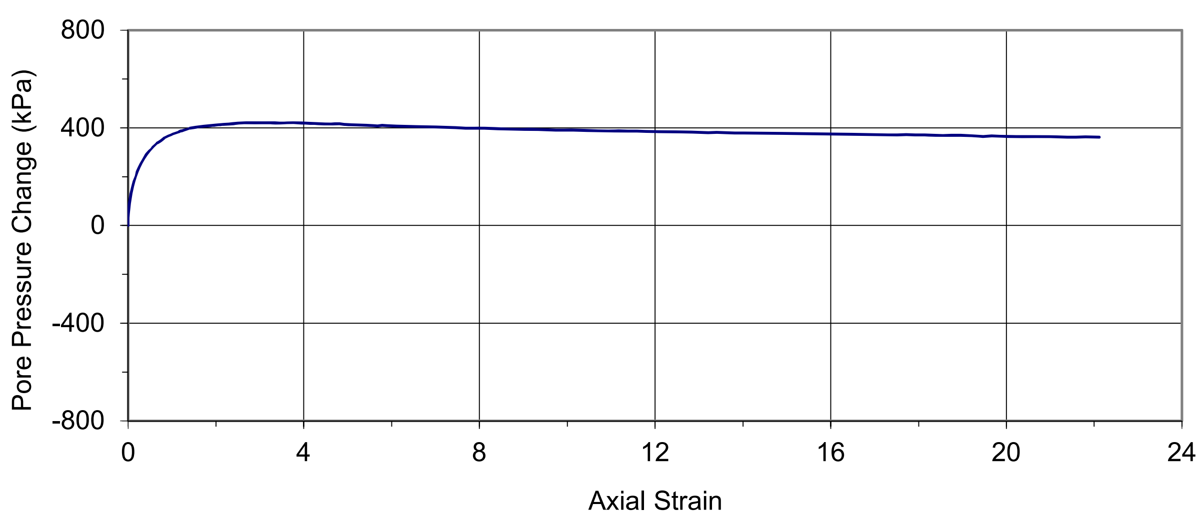
At the end of the test, no obvious shear plane was observed within the specimen. The specimen was weighed and samples were taken for moisture content, Atterberg limits and hydrometer tests.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-2B

Mount Polley Review Panel | Nov. 15 - 21, 2014
Mount Polley Tailings Storage Facility Breach | MR14-105, Sa. 4B, 3.9 m / El. 927.7 m
File Number: 15-3-280 | Effective Confining Pressure = 600 kPa

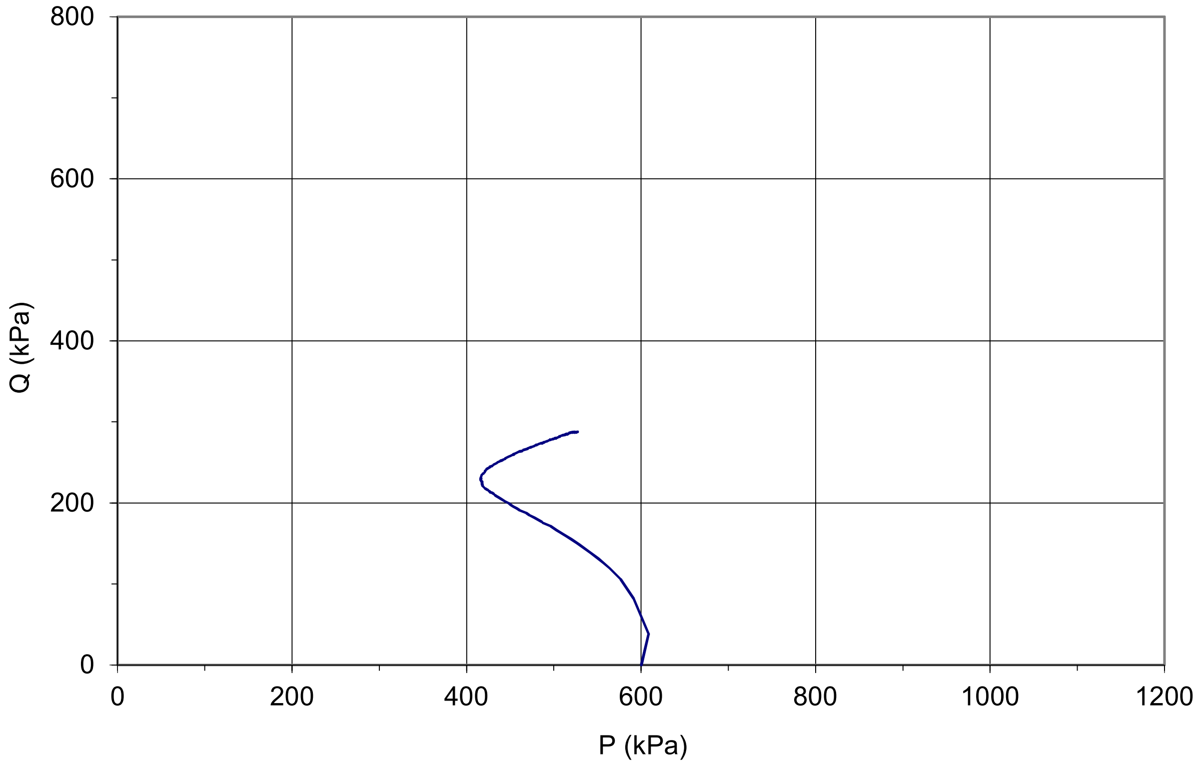




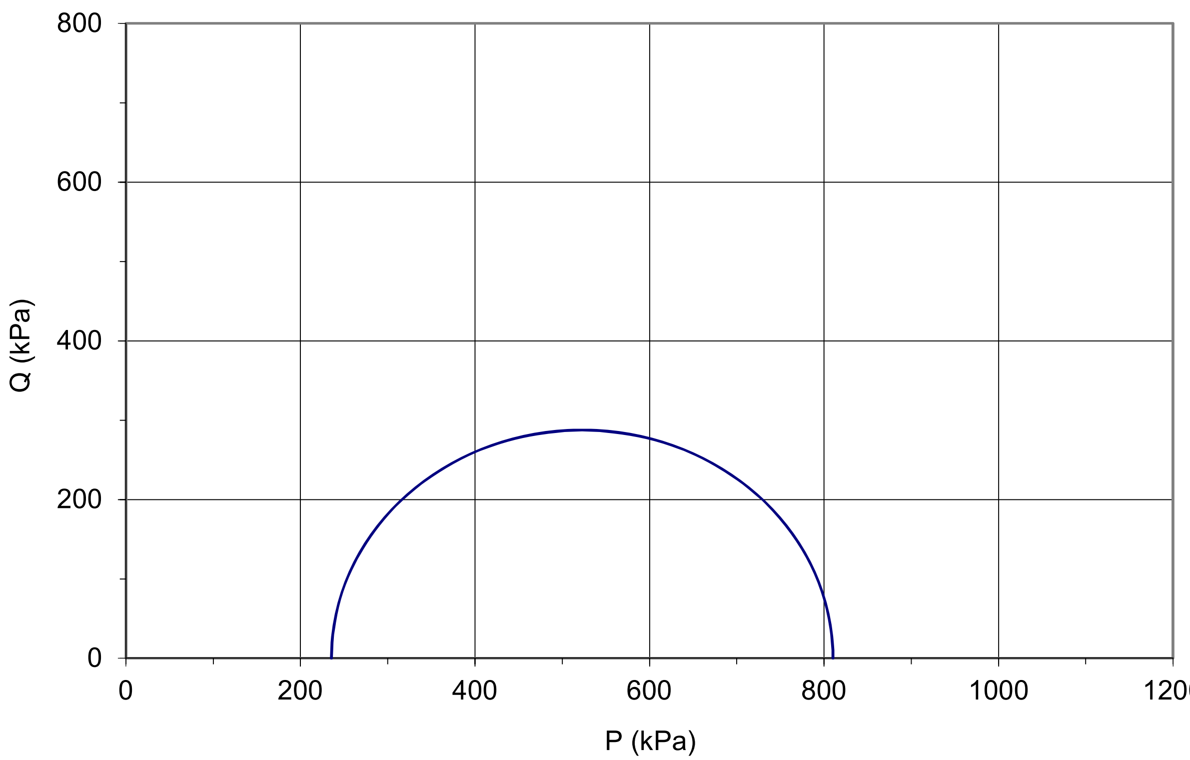


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-2B

Mount Polley Review Panel | Nov. 15 - 21, 2014
Mount Polley Tailings Storage Facility Breach | MR14-105, Sa. 4B, 3.9 m / El. 927.7 m
File Number: 15-3-280 | Effective Confining Pressure = 600 kPa



Mohr Circle at maximum Deviator Stress



THURBER

CU12-2B @ 600 kPa Before Test

THURBER

CU12-2B @ 600 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER TILL

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-4
MR14-106, Sa. 2, 4.8 m / El. 924.6 m
Effective Confining Pressure = 600 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov. 27, 2014
File Number: 15-3-280
Test Dates: Nov. 17 - 27, 2014

Index Testing Data

Gravel:	11.2%	Liquid Limit:	22
Sand:	36.2%	Plastic Limit:	12
Silt:	34.2%	Plasticity Index:	10
Clay:	18.4%	Sp. Gr.:	2.77

sandy, silty CLAY (CL), brown, moist, firm to stiff, some gravel to 15 mm dia.

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	2,312	2,374
Dry Density (kg/cu.m.):	2,062	2,151
Moisture Content:	12.1%	10.4%
Void Ratio:	0.344	0.288
Saturation:	98%	100%
Pore Press. Parameter B:	0.88	0.99

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	4.48	21.16
Stress Ratio:	3.56	3.43
Deviator Stress (kPa):	543	639
Change in Pore Pressure (kPa):	389	343
Effective Confining Pressure (kPa):	212	263
Pore Pressure Parameter A:	0.72	0.54
Rate of Displacement (%/hour):	0.77	0.77

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-4
MR14-106, Sa. 2, 4.8 m / El. 924.6 m
Effective Confining Pressure = 600 kPa

Original Sample

The original Shelby tube sample was 540 mm long by 73 mm in diameter. The specimen was trimmed at 340 - 520 mm from the top of the sample.

Test Specimen

The triaxial specimen was manually trimmed to a length of 160.13 mm and a diameter of 71.71 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

An initial cell pressure of 100 kPa resulted in a pore pressure response of 74 kPa (B=0.73). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.98 (at 450 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 600 kPa. During the first stage the sample was consolidated to an effective confining pressure of 200 kPa. During the second stage of consolidation to 600 kPa the cell pressure system failed and the cell presssure began dropping while the back pressure remained constant. The problem was detected just as the cell pressure became equal with the back pressure. The cell and back pressure valves were closed to isolate the sample while repairs were made to the cell pressure system. The cell pressure was increased in increments to the level it was at before the problem occured. The specimen was then consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress had levelled out.

After Test

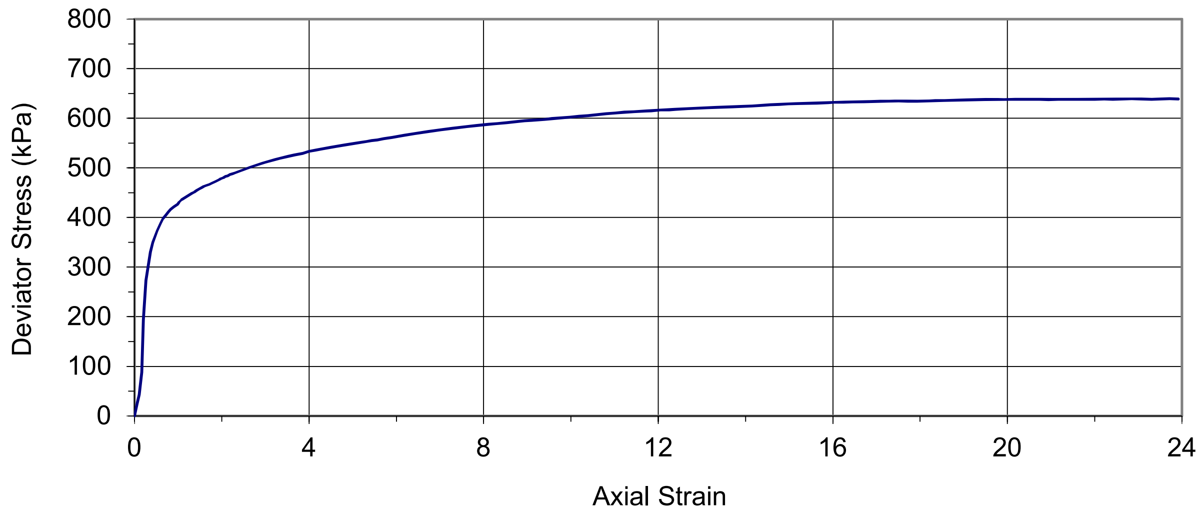
At the end of the test the specimen had bulged in the middle with no visible shear plane. The specimen was weighed and samples were taken for moisture content, Atterberg limits and hydrometer tests.

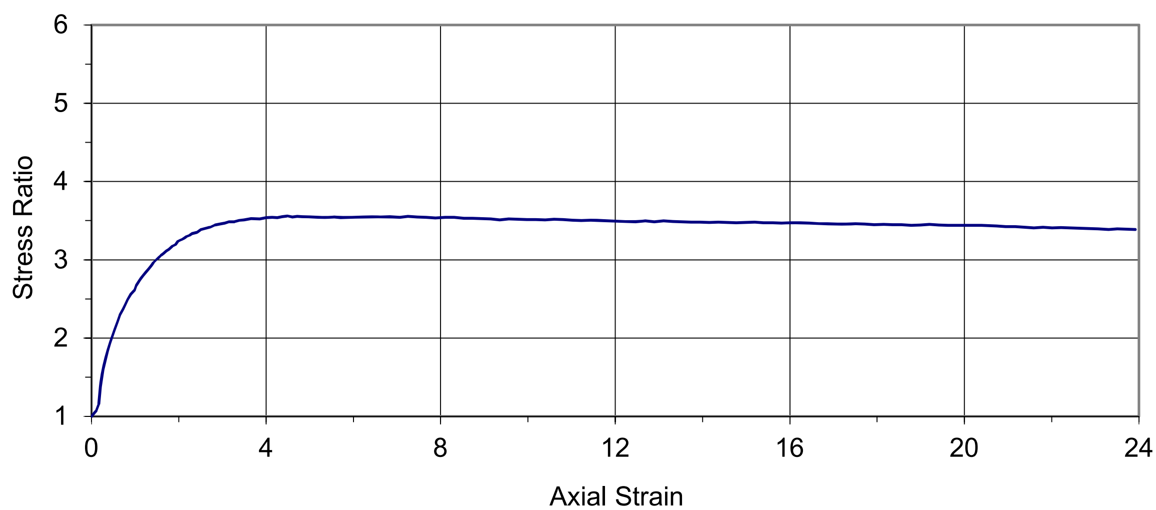
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-4

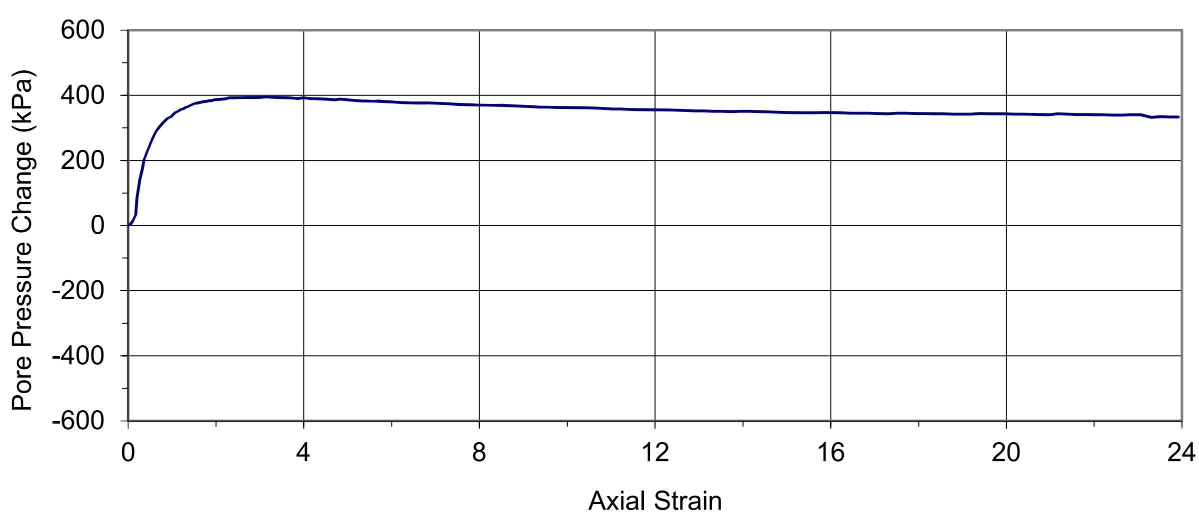
Mount Polley Review Panel — Nov. 17 - 27, 2014

Mount Polley Tailings Storage Facility Breach — MR14-106, Sa. 2, 4.8 m / El. 924.6 m

File Number: 15-3-280 — Effective Confining Pressure = 600 kPa

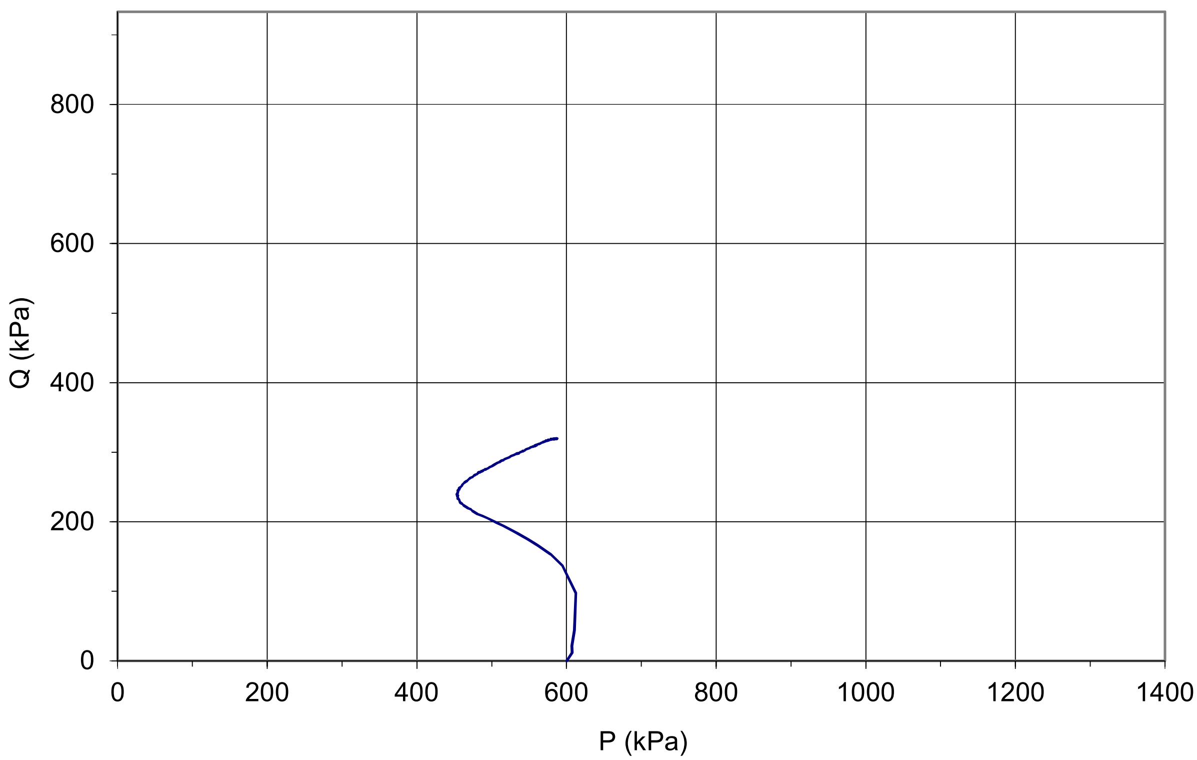




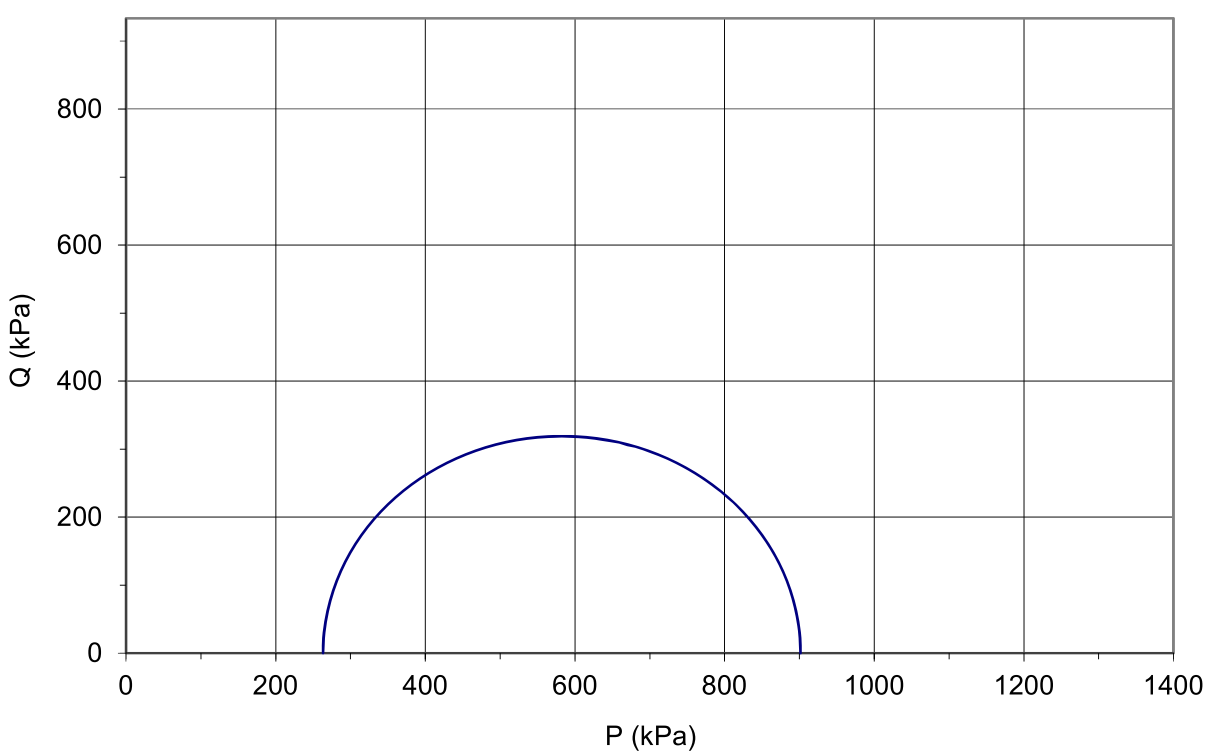


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-4

Mount Polley Review Panel	Nov. 17 - 27, 2014
Mount Polley Tailings Storage Facility Breach	MR14-106, Sa. 2, 4.8 m / El. 924.6 m
File Number: 15-3-280	Effective Confining Pressure = 600 kPa



Mohr Circle at maximum Deviator Stress



THURBER

CU14-4 @ 600 kPa Before Test

THURBER

CU14-4 @ 600 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER TILL

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-1
MR14-111, Sa. 5A, 5.7 m / El. 922.8 m
Effective Confining Pressure = 600 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov 10, 2014
File Number: 15-3-280
Test Dates: Oct. 31 - Nov 7, 2014

Index Testing Data

Gravel:	12.4%	Liquid Limit:	22
Sand:	34.6%	Plastic Limit:	14
Silt:	39.8%	Plasticity Index:	8
Clay:	13.2%	Sp. Gr. (assumed):	2.78

sandy, silty CLAY (CL), grey, moist, stiff, some gravel to 12 mm dia.

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	2,258	2,351
Dry Density (kg/cu.m.):	2,003	2,111
Moisture Content:	12.9%	11.4%
Void Ratio:	0.388	0.316
Saturation:	92%	100%
Pore Press. Parameter B:	0.88	0.99

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	5.00	15.41
Stress Ratio:	3.84	3.64
Deviator Stress (kPa):	662	890
Change in Pore Pressure (kPa):	365	265
Effective Confining Pressure (kPa):	233	338
Pore Pressure Parameter A:	0.55	0.30
Rate of Displacement (%/hour):	0.47	0.47

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-1
MR14-111, Sa. 5A, 5.7 m / El. 922.8 m
Effective Confining Pressure = 600 kPa

Original Sample

The original Shelby tube sample was a 530 mm long by 73 mm diameter. The specimen was trimmed at 150 - 320 mm from the top of the sample.

Test Specimen

The ends of the sample were manually trimmed. The length of the test specimen was 138.17 mm and the diameter was 72.30 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

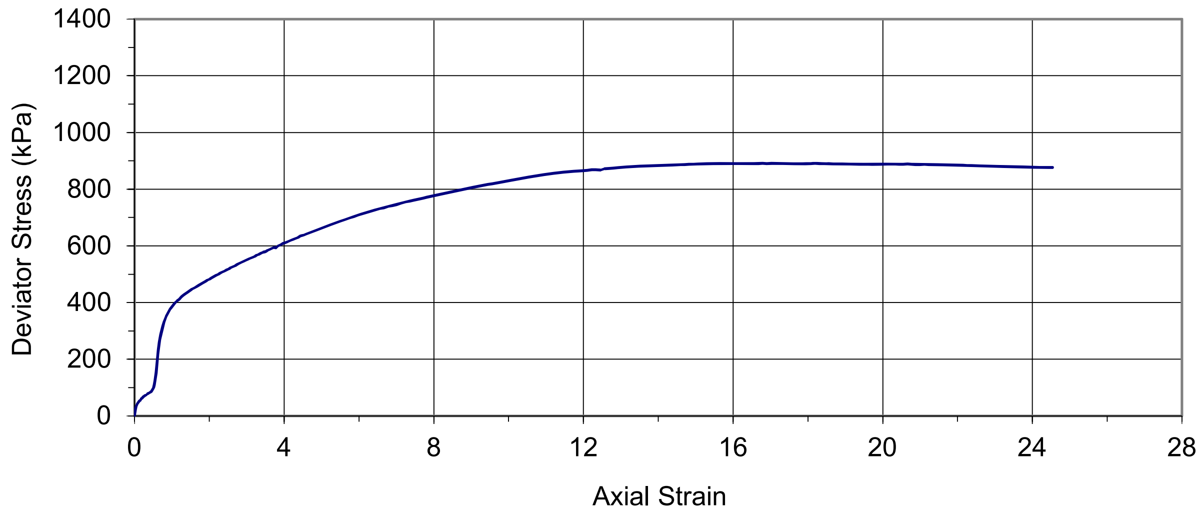
An initial cell pressure of 100 kPa resulted in a pore pressure response of 87 kPa (B=0.88). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.98 (at 400 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 600 kPa. During the first stage the sample was consolidated to an effective confining pressure of 200 kPa. For the second stage the sample was consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

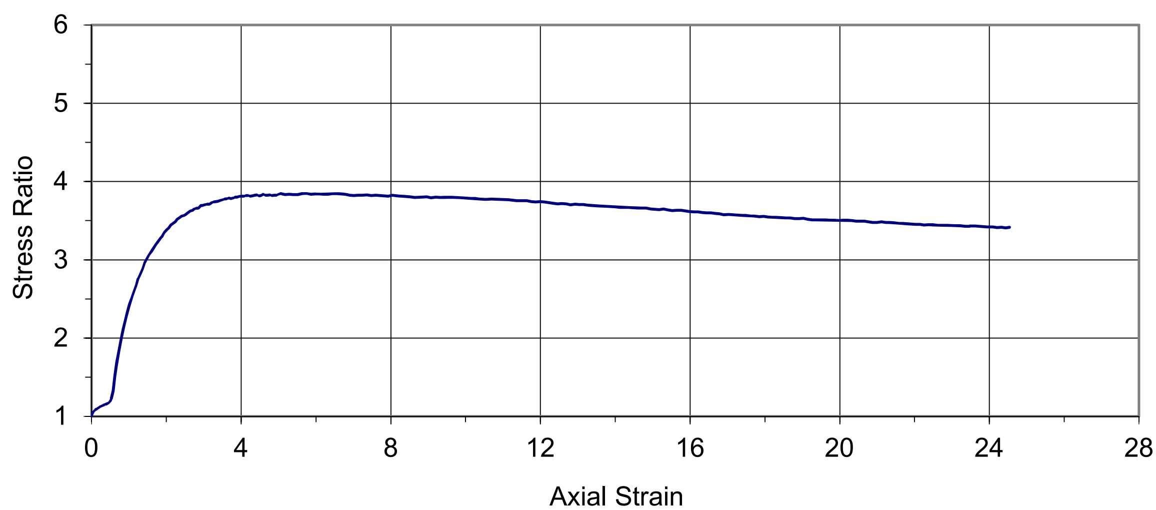
After Test

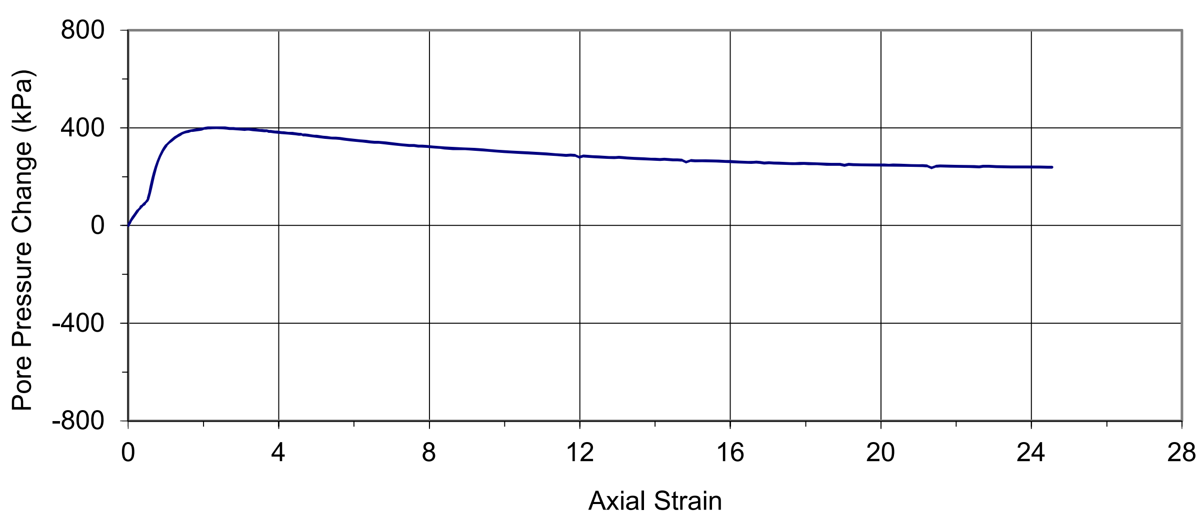
At the end of the test, no obvious shear plane was observed within the specimen. The specimen was weighed and samples were taken for moisture content, Atterberg limits, and hydometer tests.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-1

Mount Polley Review Panel — Oct. 31 - Nov 7, 2014
Mount Polley Tailings Storage Facility Breach — MR14-111, Sa. 5A, 5.7 m / El. 922.8 m
File Number: 15-3-280 — Effective Confining Pressure = 600 kPa

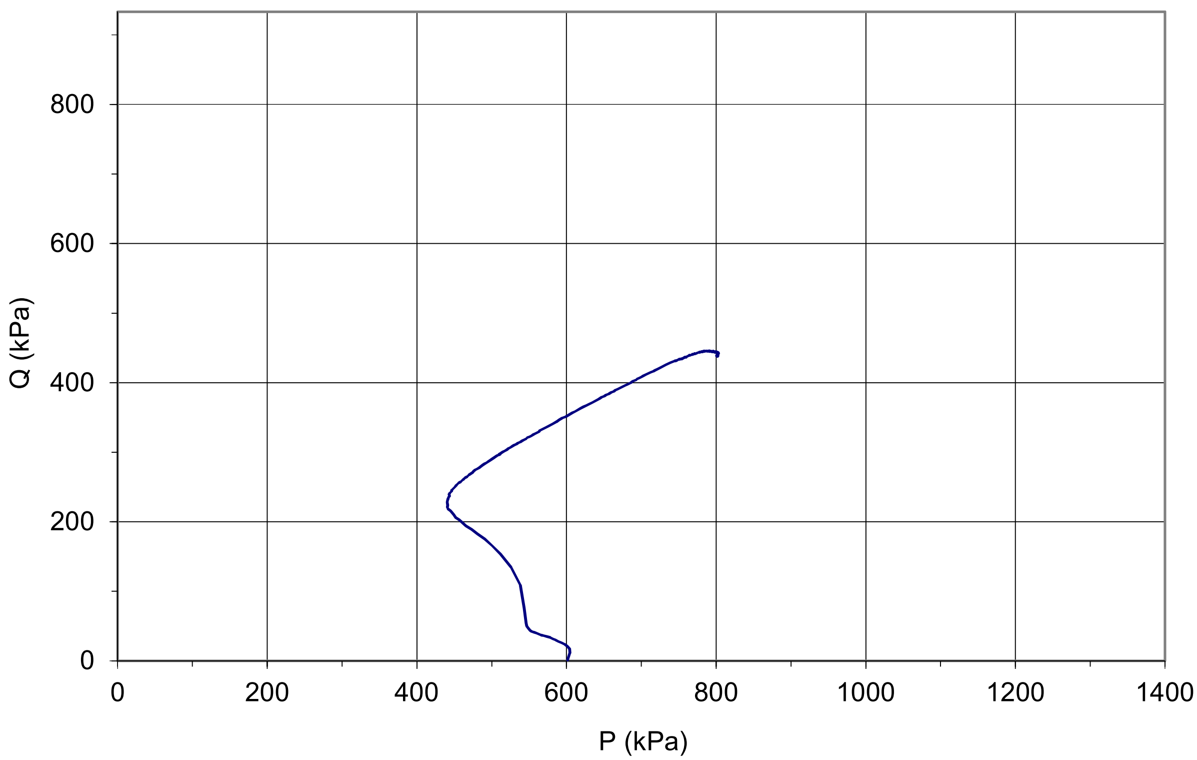




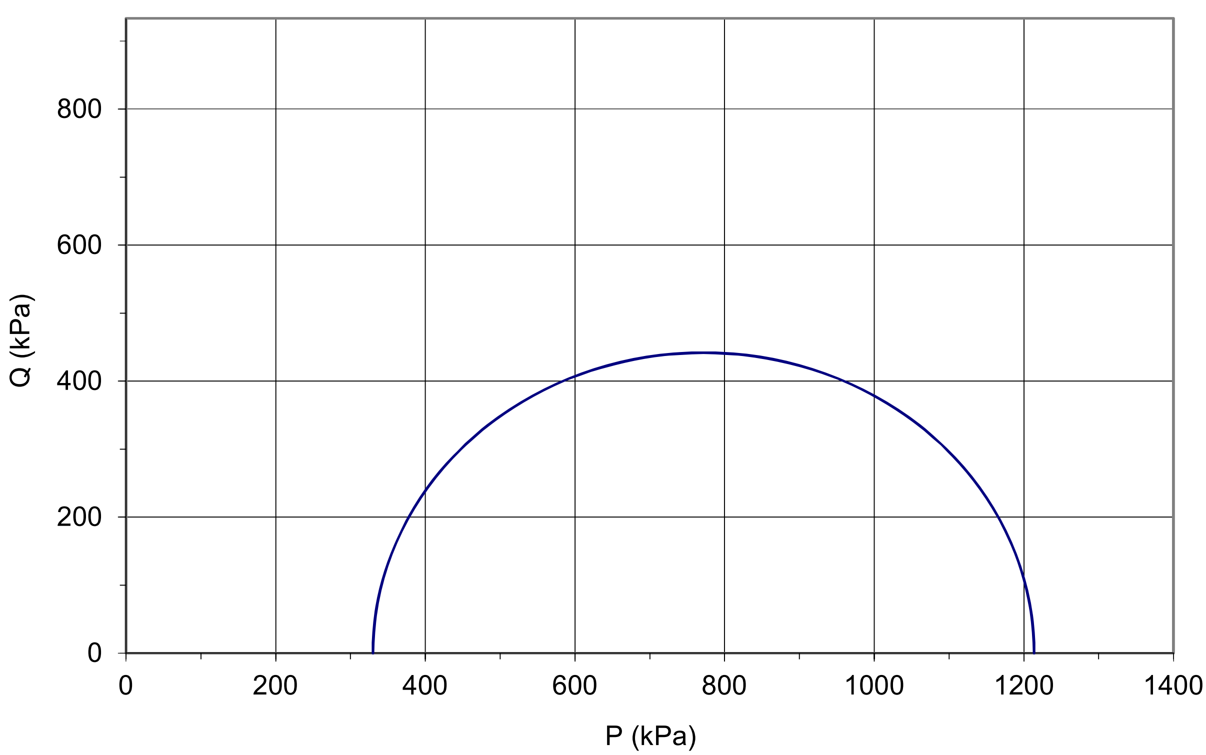


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-1

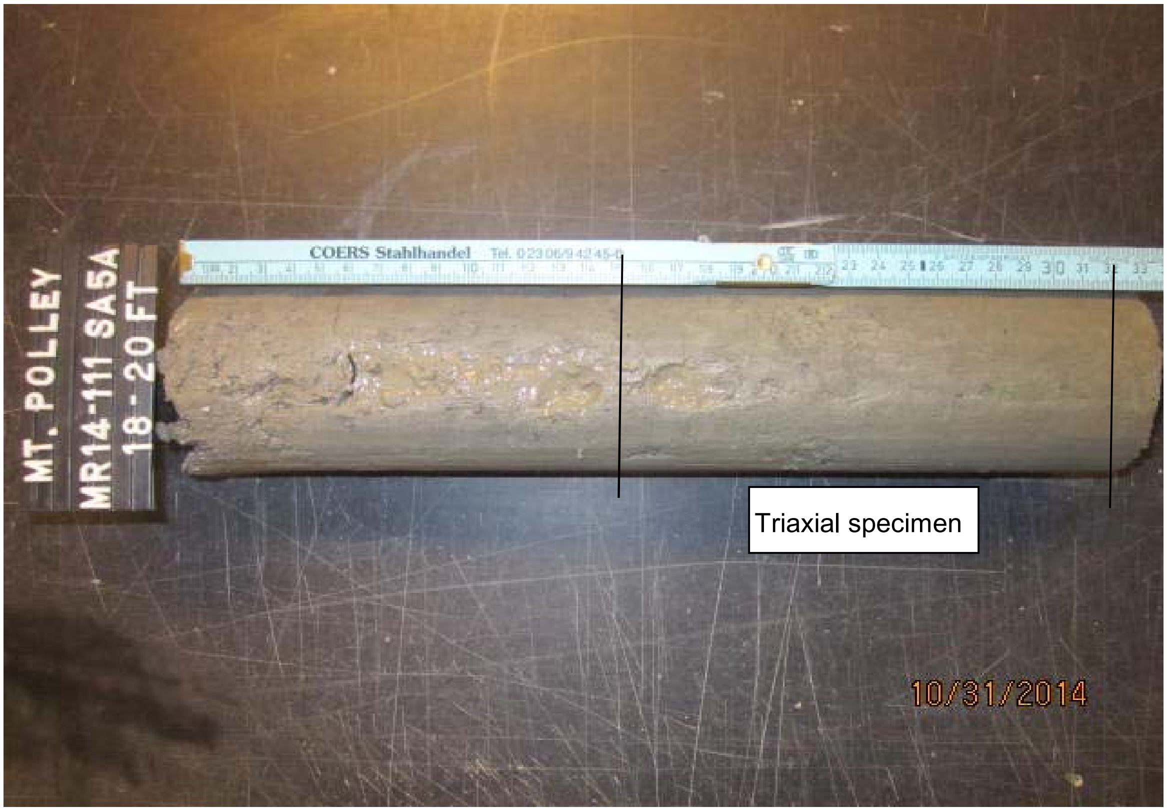
Mount Polley Review Panel — Oct. 31 - Nov 7, 2014
Mount Polley Tailings Storage Facility Breach — MR14-111, Sa. 5A, 5.7 m / El. 922.8 m
File Number: 15-3-280 — Effective Confining Pressure = 600 kPa



Mohr Circle at maximum Deviator Stress



CU14-1 @ 600 kPa Before Test



THURBER

CU14-1 @ 600 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER TILL

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-3

MR14-113, Sa. 1C, 1.4 m / El. 928.0 m
Effective Confining Pressure = 600 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Nov. 17, 2014
File Number: 15-3-280
Test Dates: Nov. 8 - 17, 2014

Index Testing Data

Gravel:	6.5%	Liquid Limit:	27
Sand:	33.0%	Plastic Limit:	14
Silt:	40.6%	Plasticity Index:	13
Clay:	19.9%	Sp. Gr. (assumed):	2.78

sandy, silty CLAY (CL), grey, moist, stiff, some gravel to 12 mm dia.

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	2,145	2,263
Dry Density (kg/cu.m.):	1,788	1,974
Moisture Content:	20.0%	14.7%
Void Ratio:	0.554	0.407
Saturation:	100%	100%
Pore Press. Parameter B:	0.50	0.98

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	6.82	11.0
Stress Ratio:	3.36	3.34
Deviator Stress (kPa):	444	448
Change in Pore Pressure (kPa):	407	408
Effective Confining Pressure (kPa):	189	191
Pore Pressure Parameter A:	0.92	0.91
Rate of Displacement (%/hour):	0.26	0.26

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-3
MR14-113, Sa. 1C, 1.4 m / El. 928.0 m
Effective Confining Pressure = 600 kPa

Original Sample

The original Shelby tube sample was a 530 mm long by 73 mm diameter. The specimen was trimmed at 130 - 320 mm from the top of the sample.

Test Specimen

The ends of the sample were manually trimmed. The length of the test specimen was 148.76 mm and the diameter was 72.03 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex rubber membrane.

Test Procedure

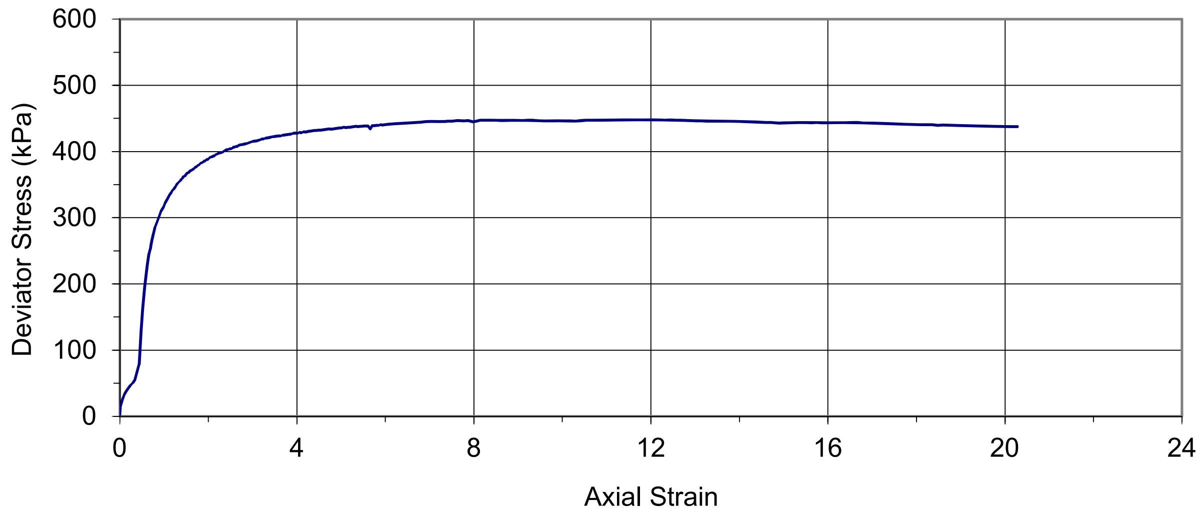
An initial cell pressure of 100 kPa resulted in a pore pressure response of 92 kPa (B=0.92). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.98 (at 400 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 600 kPa. During the first stage the sample was consolidated to an effective confining pressure of 200 kPa. For the second stage the sample was consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

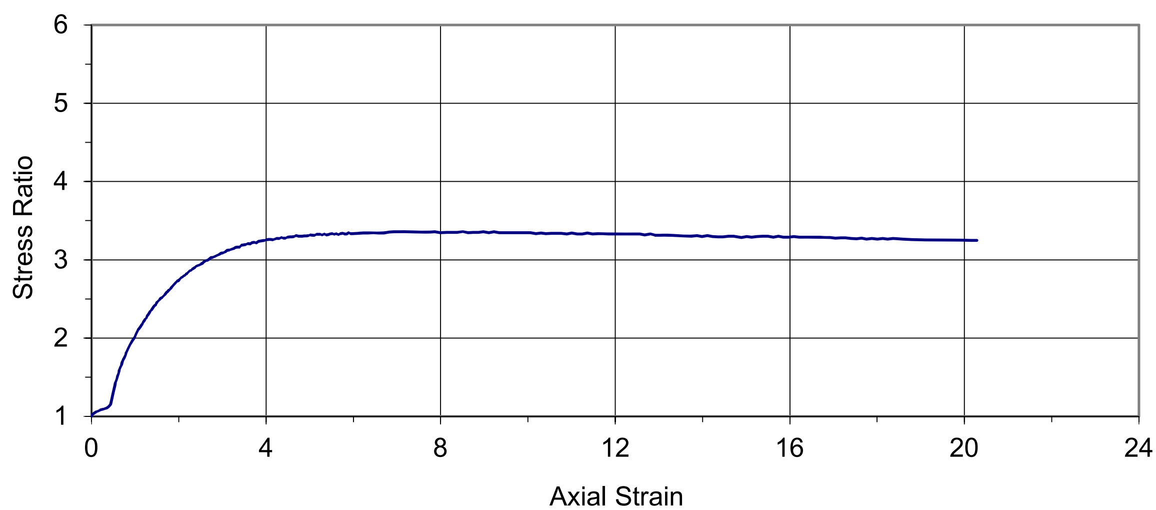
After Test

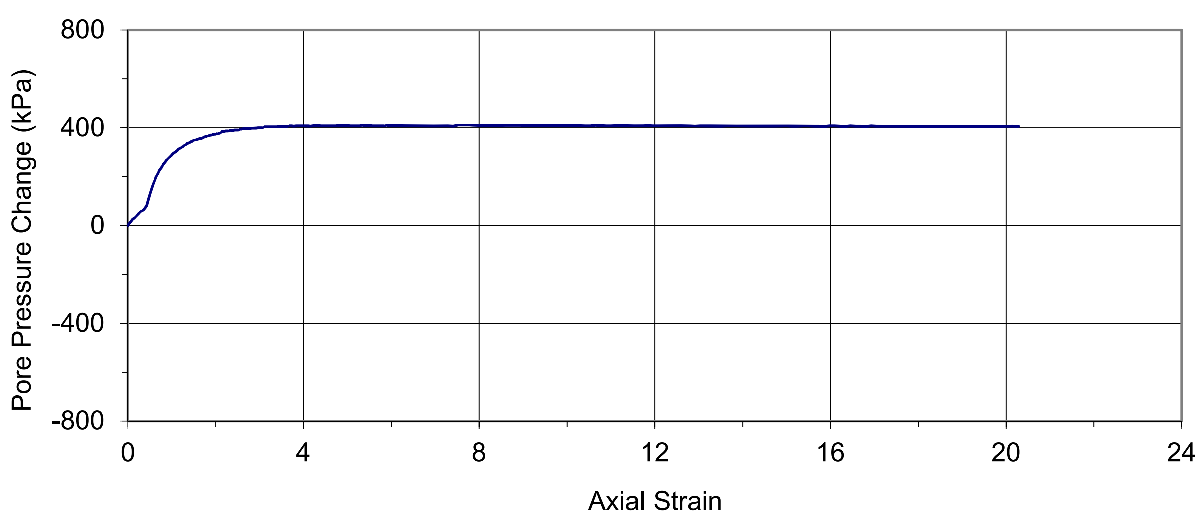
At the end of the test, no obvious shear plane was observed within the specimen. The specimen was weighed and samples were taken for moisture content, Atterberg limits, hydrometer and specific gravity tests.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-3

Mount Polley Review Panel | Nov. 8 - 17, 2014
Mount Polley Tailings Storage Facility Breach | MR14-113, Sa. 1C, 1.4 m / El. 928.0 m
File Number: 15-3-280 | Effective Confining Pressure = 600 kPa

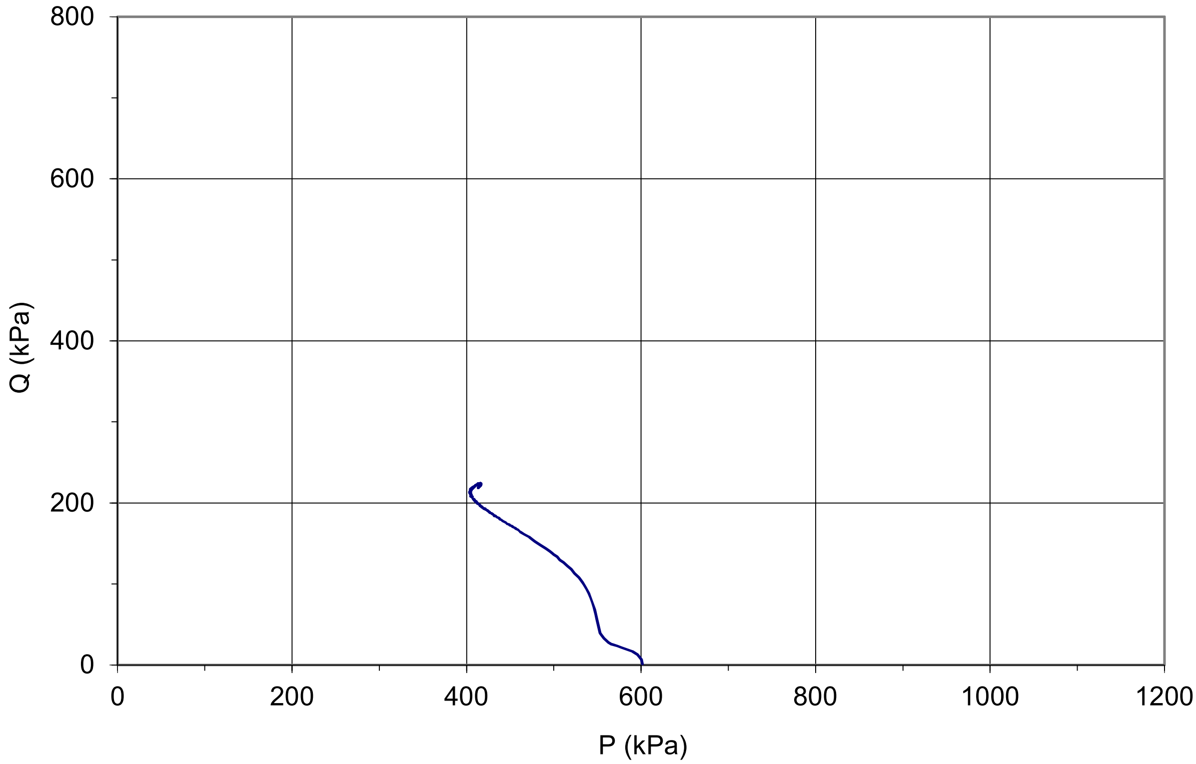




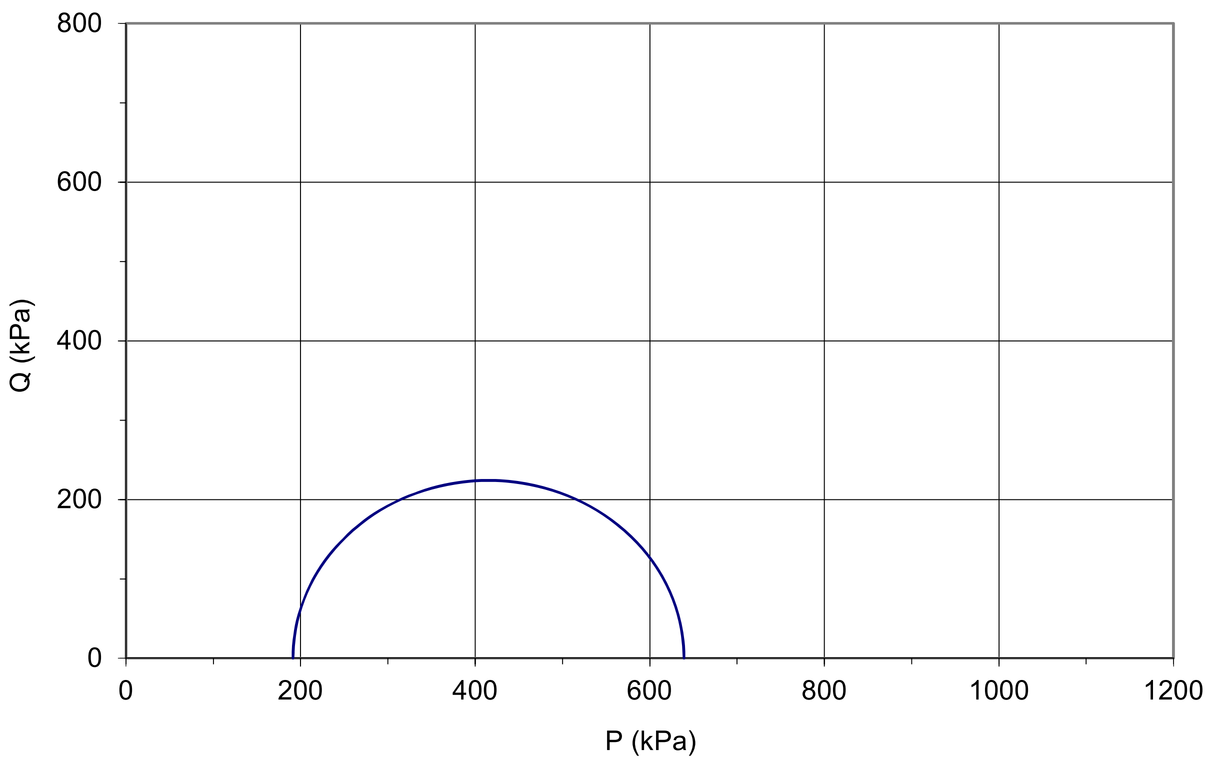


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-3

Mount Polley Review Panel | Nov. 8 - 17, 2014
Mount Polley Tailings Storage Facility Breach | MR14-113, Sa. 1C, 1.4 m / El. 928.0 m
File Number: 15-3-280 | Effective Confining Pressure = 600 kPa

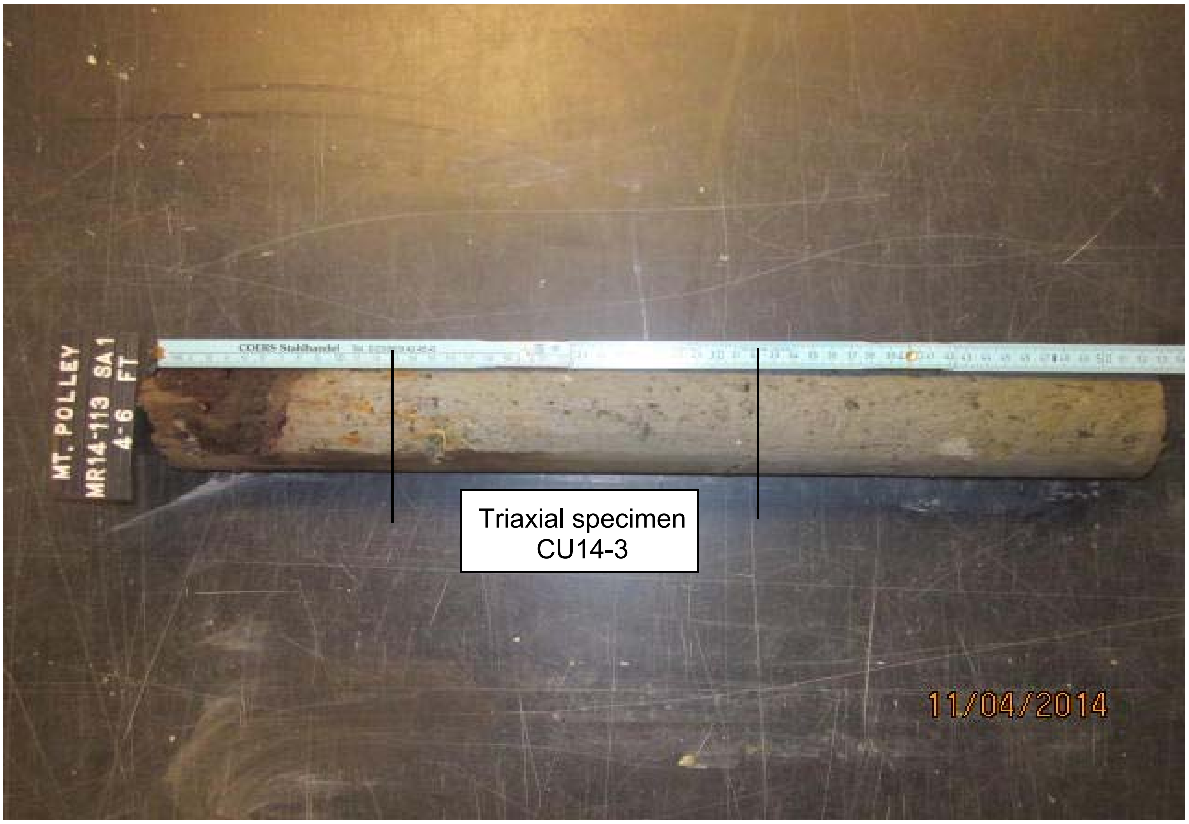


Mohr Circle at maximum Deviator Stress



THURBER

CU14-3 @ 600 kPa Before Test



THURBER

CU14-3 @ 600 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER GLU

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-7
MR14-106E, Sa. 2C, 8.0 m / El. 921.0 m
Effective Confining Pressure = 150 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Dec. 9, 2014
File Number: 15-3-280
Test Dates: Dec. 1 - 8, 2014

Index Testing Data

Gravel:	0.0%	Liquid Limit:	50
Sand:	0.5%	Plastic Limit:	21
Silt:	48.2%	Plasticity Index:	29
Clay:	51.3%	Sp. Gr. (assumed):	2.86

silty CLAY (CH), bown, thinly bedded, high plasticity

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	1,876	1,919
Dry Density (kg/cu.m.):	1,386	1,413
Moisture Content:	35.4%	35.8%
Void Ratio:	1.064	1.024
Saturation:	95%	100%
Pore Press. Parameter B:	0.55	0.97

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	1.34	1.55
Stress Ratio:	3.98	3.97
Deviator Stress (kPa):	184	185
Change in Pore Pressure (kPa):	89	88
Effective Confining Pressure (kPa):	61	62
Pore Pressure Parameter A:	0.48	0.48
Rate of Displacement (%/hour):	0.36	0.36

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-7
MR14-106E, Sa. 2C, 8.0 m / El. 921.0 m
Effective Confining Pressure = 150 kPa

Original Sample

The original Shelby tube sample was 600 mm long by 73 mm in diameter.

Test Specimen

The triaxial specimen was taken from the lower half of the Shelby tube sample. It was manually trimmed to a length of 147.78 mm and a diameter of 71.64 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

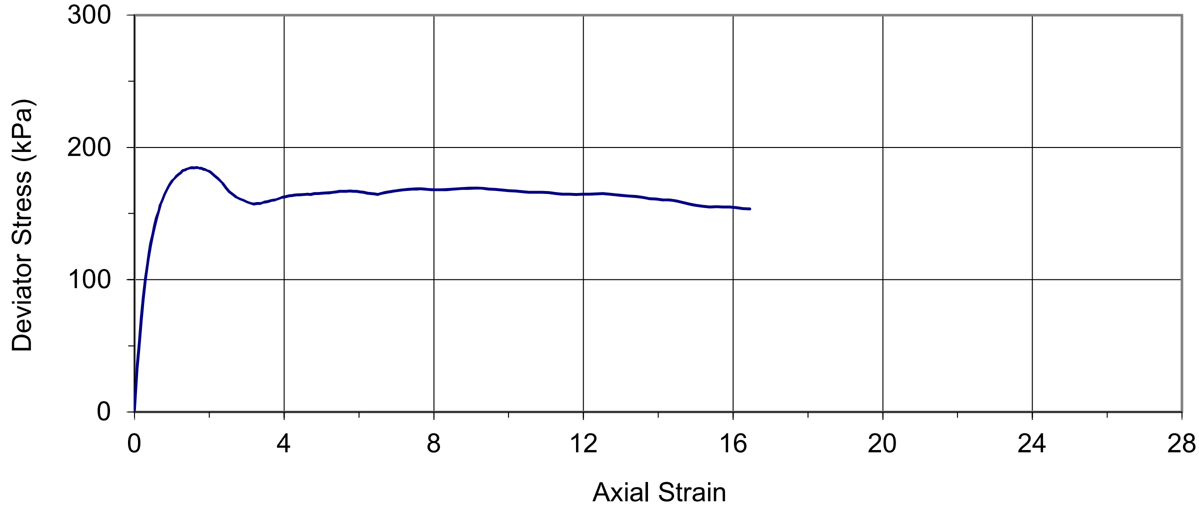
An initial cell pressure of 100 kPa resulted in a pore pressure response of 55 kPa (B=0.55). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.98 (at 400 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 150 kPa. During the first stage the sample was consolidated to an effective confining pressure of 75 kPa. For the second stage the sample was consolidated to the required effective confining pressure of 150 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

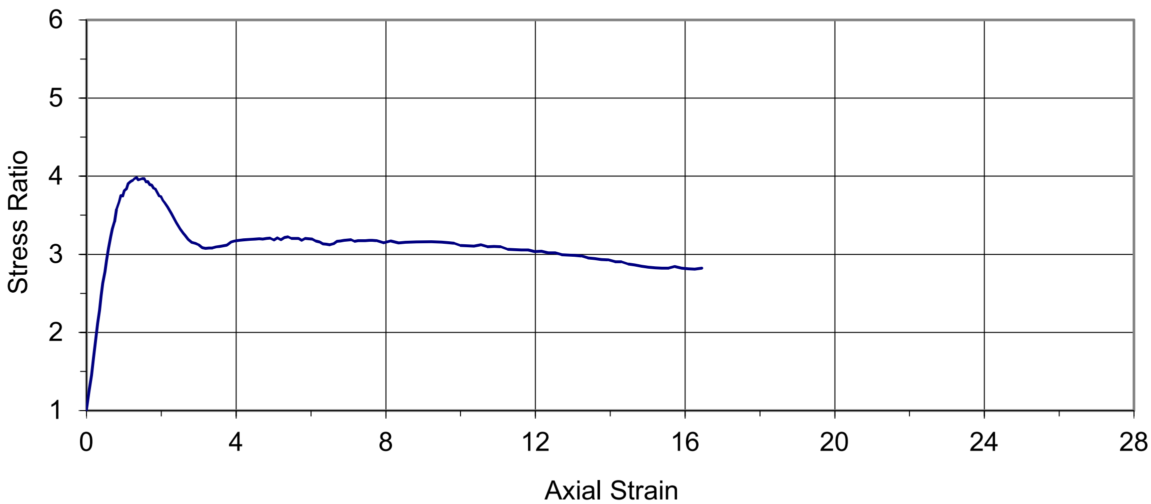
After Test

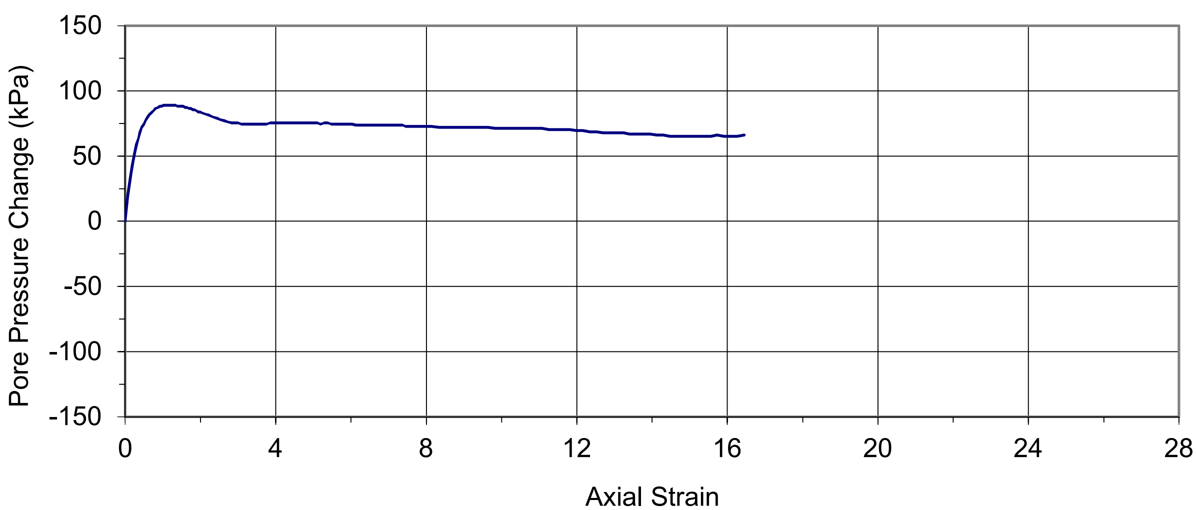
At the end of the test a two shear planes at an angle of 60^0 crossed each other in the middle of the specimen. The specimen was weighed and samples were taken for moisture content, hydrometer and Atterberg limits.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-7

Mount Polley Review Panel	Dec. 1 - 8, 2014
Mount Polley Tailings Storage Facility Breach	MR14-106E, Sa. 2C, 8.0 m / El. 921.0 m
File Number: 15-3-280	Effective Confining Pressure = 150 kPa

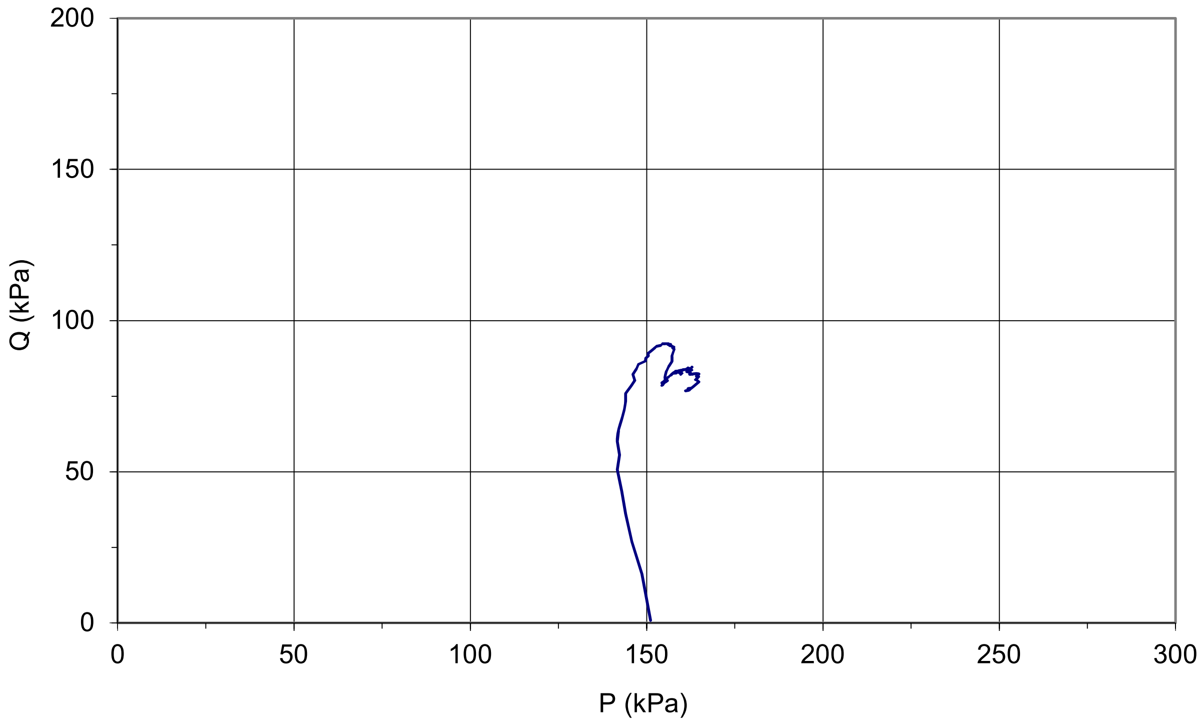


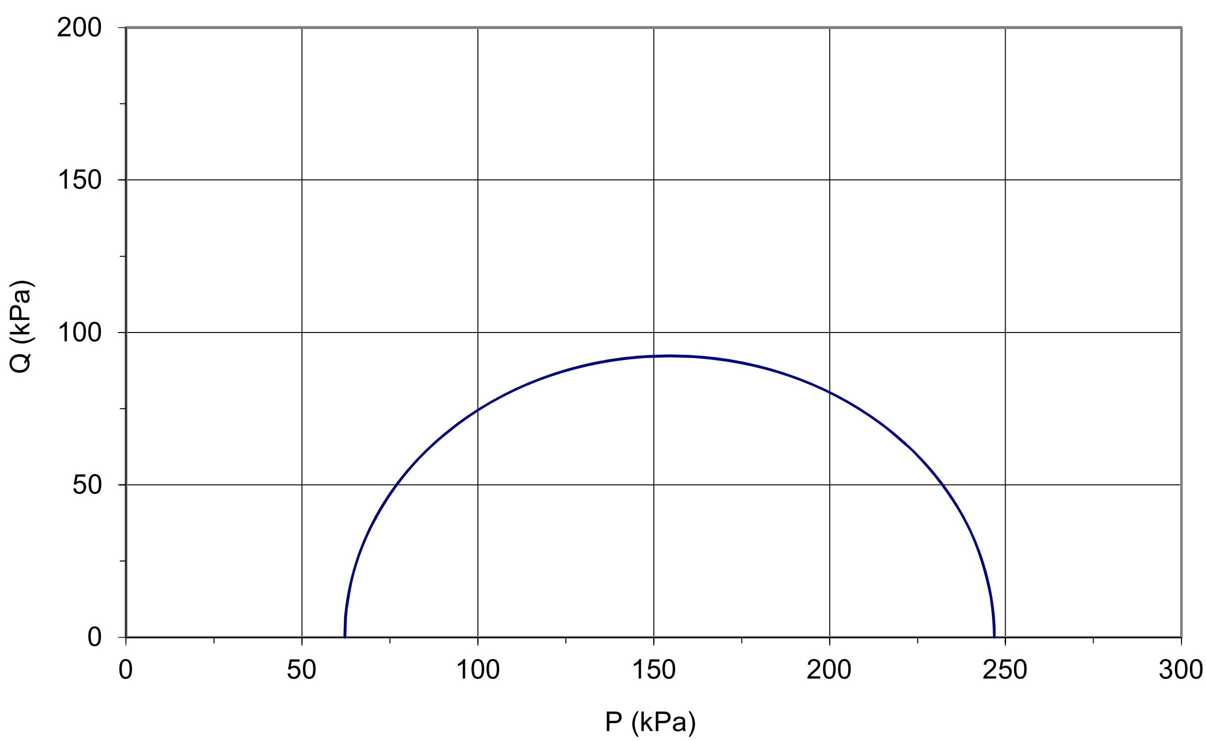




CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-7

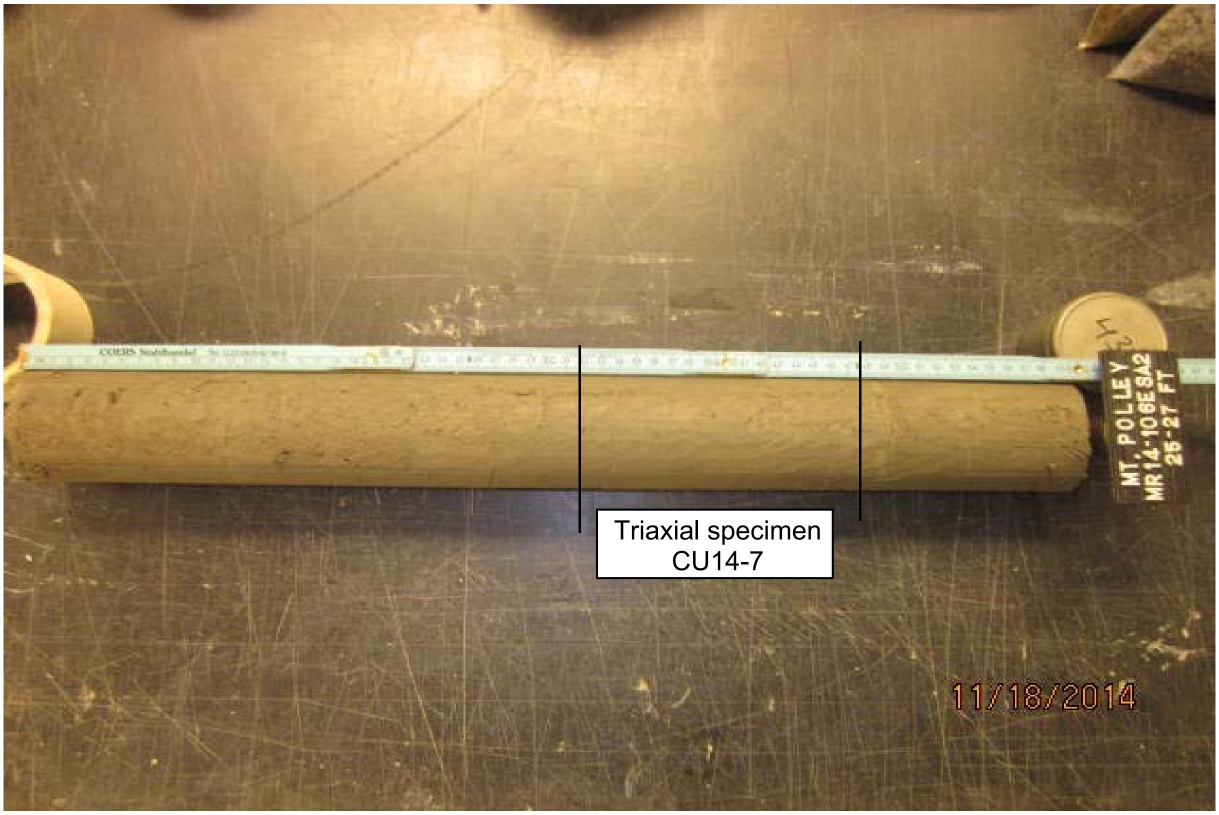
Mount Polley Review Panel | Dec. 1 - 8, 2014
Mount Polley Tailings Storage Facility Breach | MR14-106E, Sa. 2C, 8.0 m / El. 921.0 m
File Number: 15-3-280 | Effective Confining Pressure = 150 kPa





THURBER

CU14-7 @ 150 kPa Before Test



CU14-7 @ 150 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER GLU

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-6

MR14-106E, Sa. 3C, 8.8 m / El. 920.2 m
Effective Confining Pressure = 300 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Dec. 9, 2014
File Number: 15-3-280
Test Dates: Nov. 27 - Dec. 7, 2014

Index Testing Data

Gravel:	0.0%	Liquid Limit:	55
Sand:	0.0%	Plastic Limit:	22
Silt:	42.4%	Plasticity Index:	33
Clay:	57.6%	Sp. Gr.:	2.87

silty CLAY (CH), brown, thinly bedded, medium plasticity

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	1,841	1,896
Dry Density (kg/cu.m.):	1,314	1,375
Moisture Content:	40.1%	37.9%
Void Ratio:	1.185	1.088
Saturation:	97%	100%
Pore Press. Parameter B:	0.88	0.99

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	1.71	1.71
Stress Ratio:	3.07	3.07
Deviator Stress (kPa):	242	242
Change in Pore Pressure (kPa):	183	183
Effective Confining Pressure (kPa):	117	117
Pore Pressure Parameter A:	0.76	0.76
Rate of Displacement (%/hour):	0.37	0.37

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-6
MR14-106E, Sa. 3C, 8.8 m / El. 920.2 m
Effective Confining Pressure = 300 kPa

Original Sample

The original Shelby tube sample was 600 mm long by 73 mm in diameter.

Test Specimen

The triaxial specimen was taken from the upper half of the Shelby tube sample. It was manually trimmed to a length of 152.71 mm and a diameter of 71.29 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

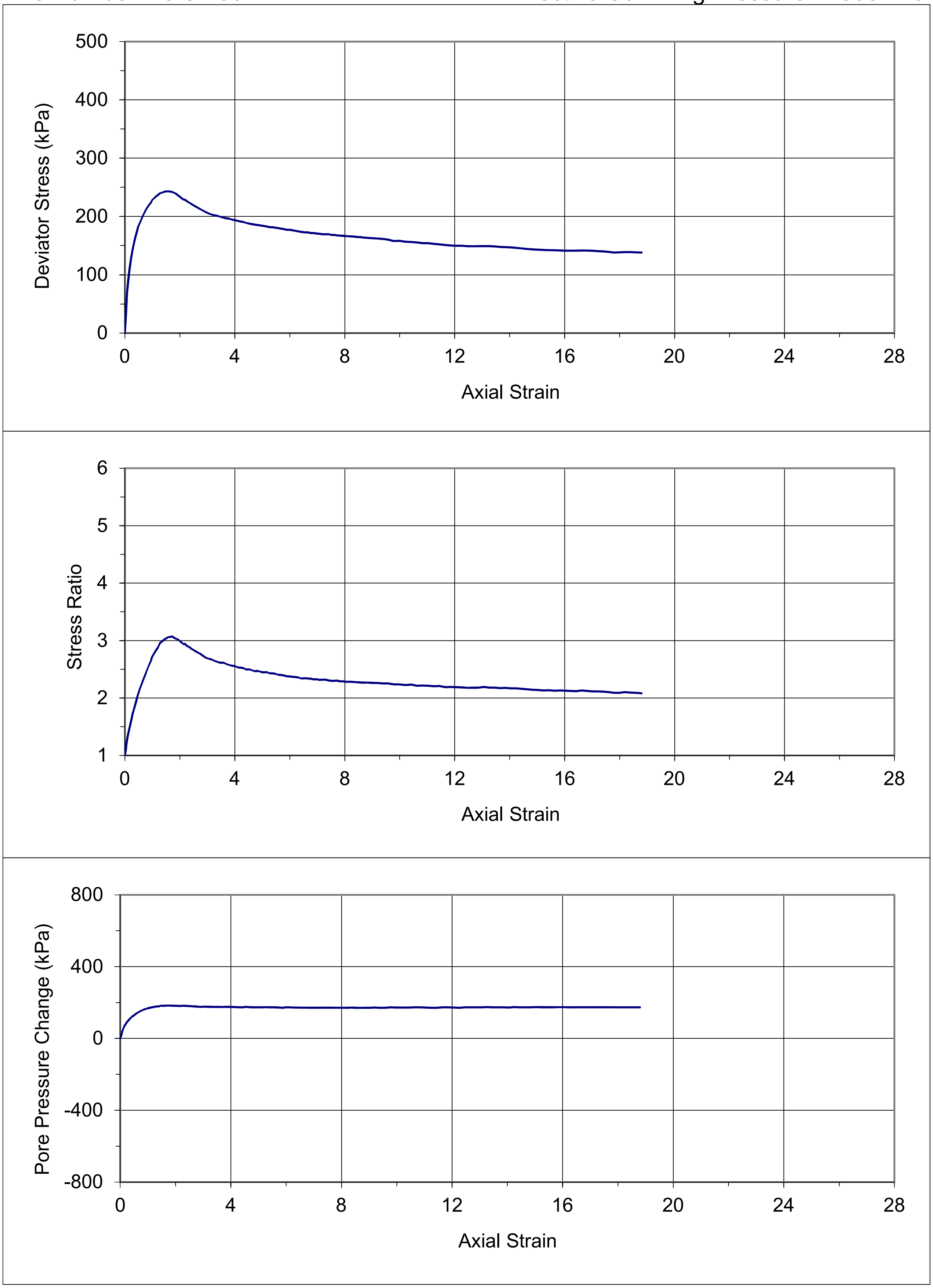
An initial cell pressure of 100 kPa resulted in a pore pressure response of 74 kPa (B=0.76). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=1.00 (at 500 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in three stages to the required effective confining pressure of 300 kPa. During the first stage the sample was consolidated to an effective confining pressure of 50 kPa. For the second stage the sample was consolidated to an effective confining pressure of 100 kPa.For the third stage the sample was consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

After Test

At the end of the test a shear plane at an angle of 60^0 had developed in the lower half of the specimen. The specimen was weighed and samples were taken for moisture content, hydrometer and Atterberg limits.

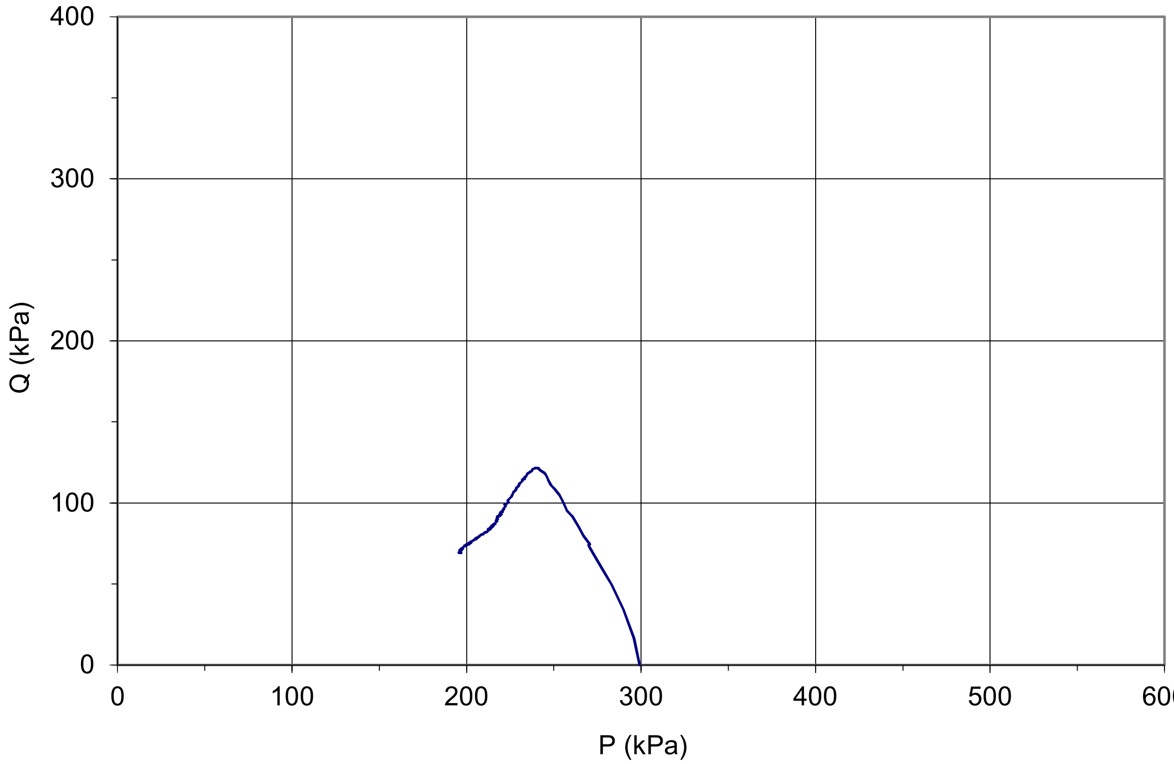
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-6

Mount Polley Review Panel — Nov. 27 - Dec. 7, 2014
Mount Polley Tailings Storage Facility Breach — MR14-106E, Sa. 3C, 8.8 m / El. 920.2 m
File Number: 15-3-280 — Effective Confining Pressure = 300 kPa

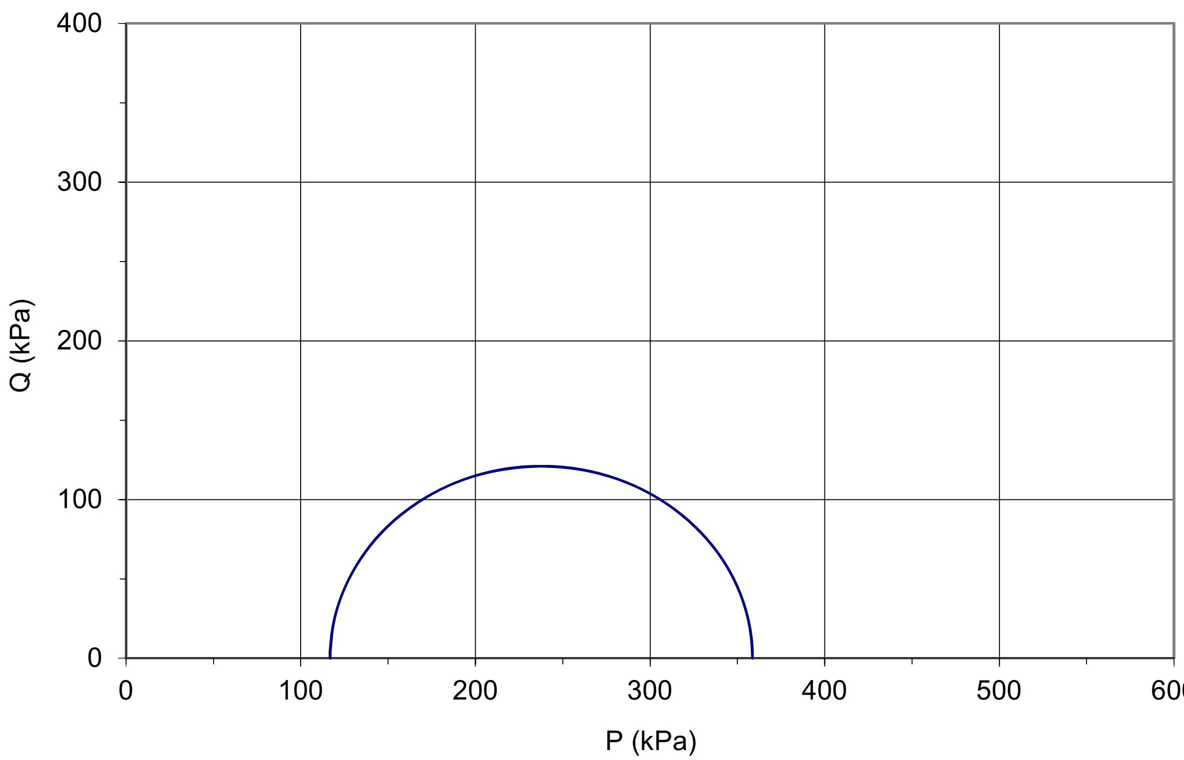


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-6

Mount Polley Review Panel	Nov. 27 - Dec. 7, 2014
Mount Polley Tailings Storage Facility Breach	MR14-106E, Sa. 3C, 8.8 m / El. 920.2 m
File Number: 15-3-280	Effective Confining Pressure = 300 kPa

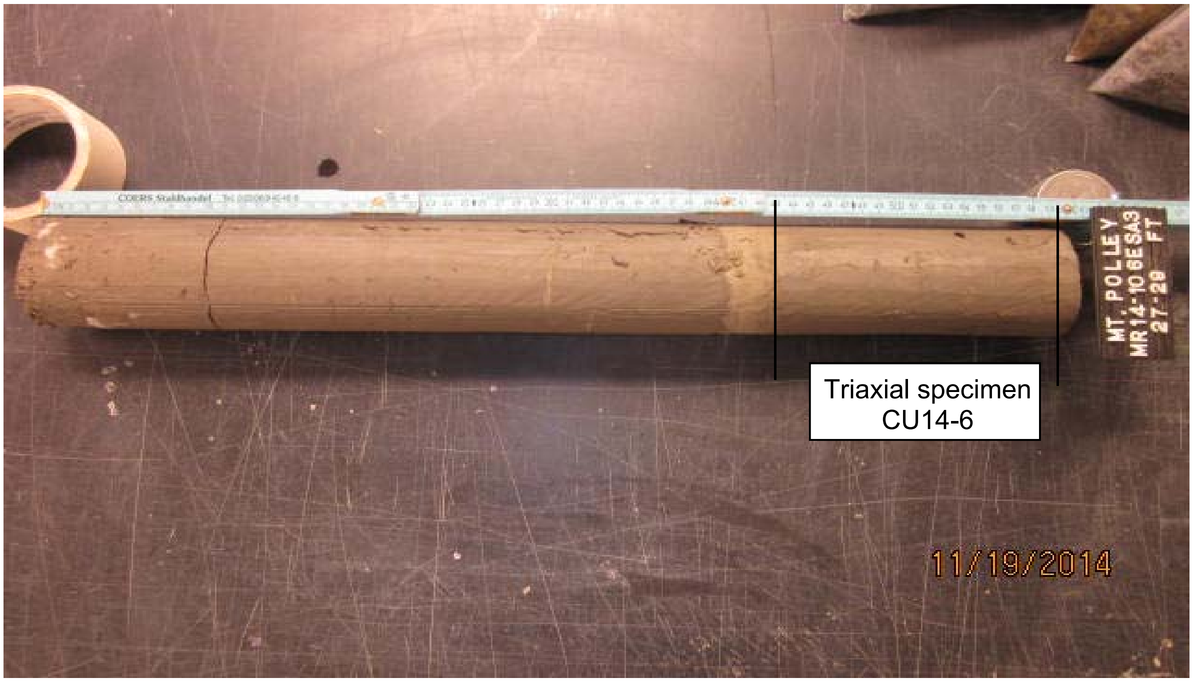


Mohr Circle at maximum Deviator Stress



THURBER

CU14-6 @ 300 kPa Before Test



THURBER

CU14-6 @ 300 kPa After Test

CU14-6 @ 300 kPa After Test

PANEL COMMENT
SOIL UNIT: UPPER GLU

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-5
MR14-106E, Sa. 3B, 8.4 m / El. 920.5 m
Effective Confining Pressure = 600 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Dec. 9, 2014
File Number: 15-3-280
Test Dates: Nov. 21 - 29, 2014

Index Testing Data

Gravel:	0.0%	Liquid Limit:	55
Sand:	1.0%	Plastic Limit:	20
Silt:	40.6%	Plasticity Index:	35
Clay:	58.4%	Sp. Gr.:	2.86

silty CLAY (CH), bown, thinly bedded, medium plasticity

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	1,846	1,908
Dry Density (kg/cu.m.):	1,318	1,396
Moisture Content:	40.1%	36.6%
Void Ratio:	1.170	1.048
Saturation:	98%	100%
Pore Press. Parameter B:	0.88	0.99

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	6.91	1.75
Stress Ratio:	3.09	2.55
Deviator Stress (kPa):	330	367
Change in Pore Pressure (kPa):	445	364
Effective Confining Pressure (kPa):	158	238
Pore Pressure Parameter A:	1.35	0.99
Rate of Displacement (%/hour):	0.37	0.37

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-5
MR14-106E, Sa. 3B, 8.4 m / El. 920.5 m
Effective Confining Pressure = 600 kPa

Original Sample

The original Shelby tube sample was 600 mm long by 73 mm in diameter.

Test Specimen

The triaxial specimen was taken near the bottom of the Shelby tube sample. It was manually trimmed to a length of 155.37 mm and a diameter of 71.71 mm.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

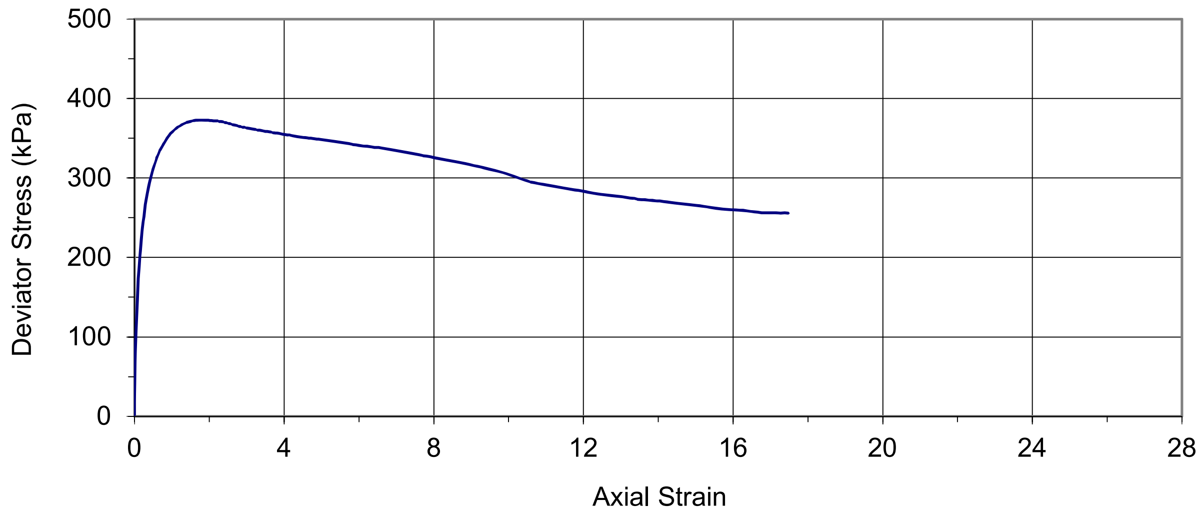
The inital application of cell pressure resulted in B=1.00 indicating that the specimen was saturated. An attempt was made to consolidate the specimen to an effective confining pressure of 50kPa. It became clear within a few minutes that there was a leak between the cell and the back pressure. The apparatus was dismantled, fittings were tightened and a second membrane was placed over the specimen. Application of a cell pressure of 100 kPa resulted in a pore pressure response of 82 kPa (B=0.84). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.97 (at 400 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in two stages to the required effective confining pressure of 600 kPa. During the first stage the sample was consolidated to an effective confining pressure of 200 kPa. For the second stage the sample was consolidated to the required effective confining pressure of 600 kPa. The back pressure valve was closed and axial loading was carried out until shear planes were visible in the specimen.

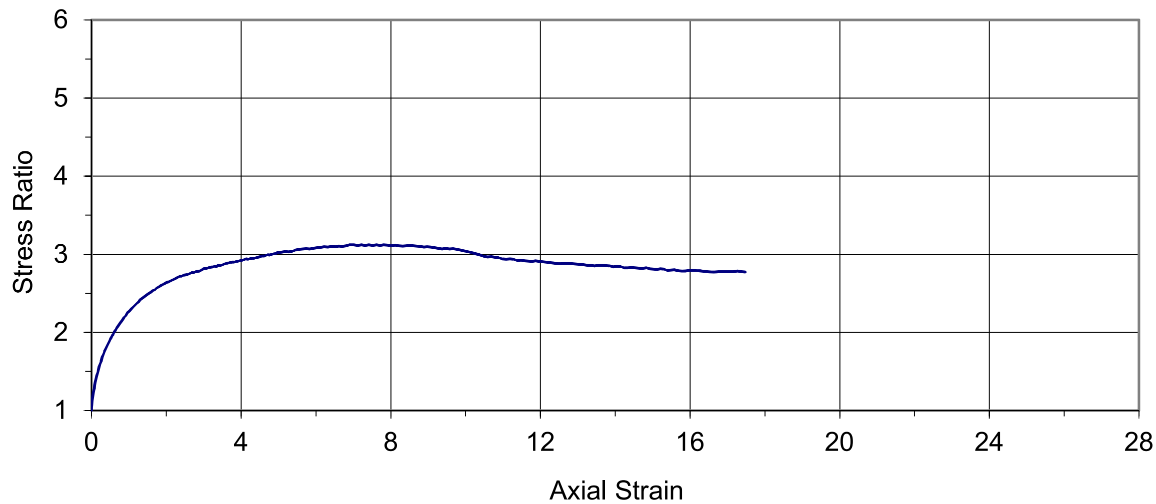
After Test

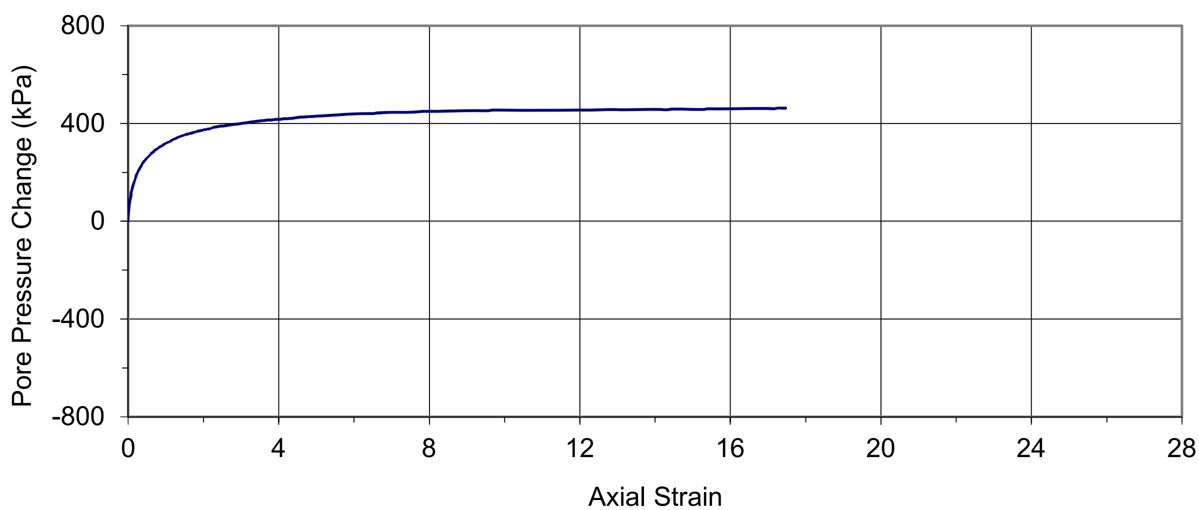
At the end of the test two "V" shaped shear planes had formed at an angle of 60^0 to the horizontal. The shear planes met in the center of the specimen. The specimen was weighed and moisture content, Atterberg limits, hydrometer and specific gravity samples were taken.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-5

Mount Polley Review Panel | Nov. 21 - 29, 2014
Mount Polley Tailings Storage Facility Breach | MR14-106E, Sa. 3B, 8.4 m / El. 920.5 m
File Number: 15-3-280 | Effective Confining Pressure = 600 kPa



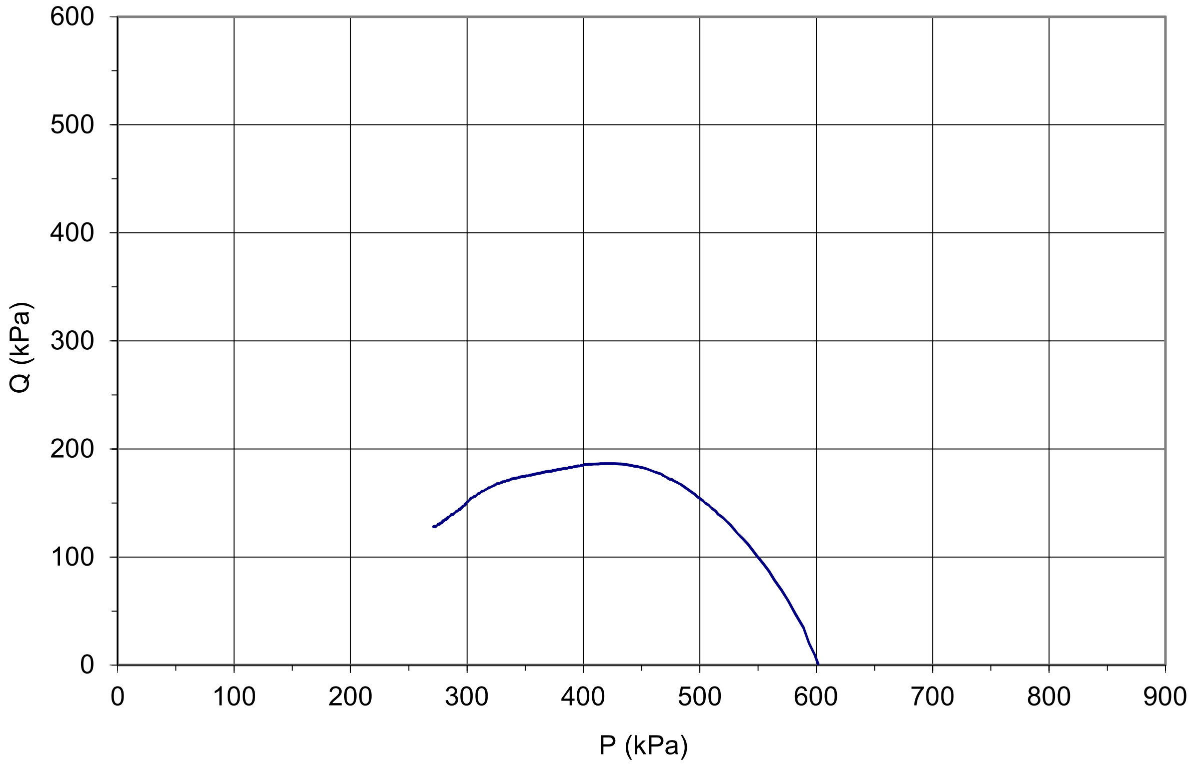




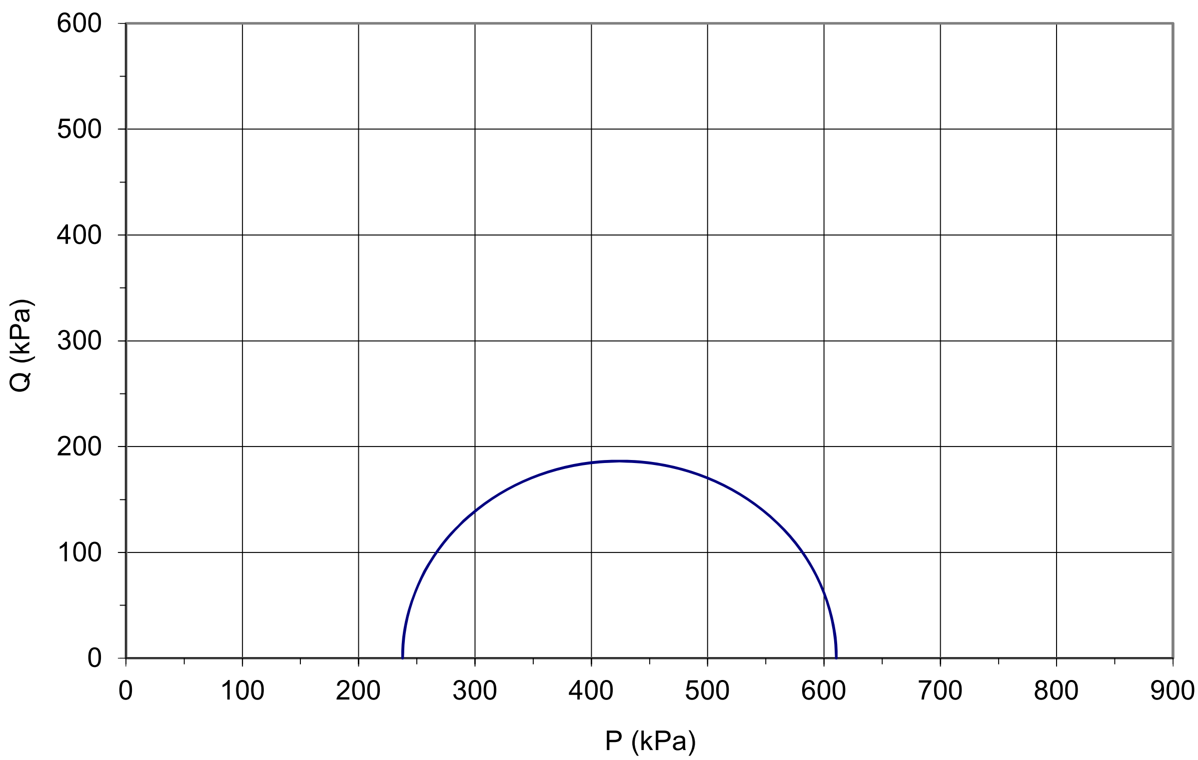
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-5

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

Nov. 21 - 29, 2014
MR14-106E, Sa. 3B, 8.4 m / El. 920.5 m
Effective Confining Pressure = 600 kPa

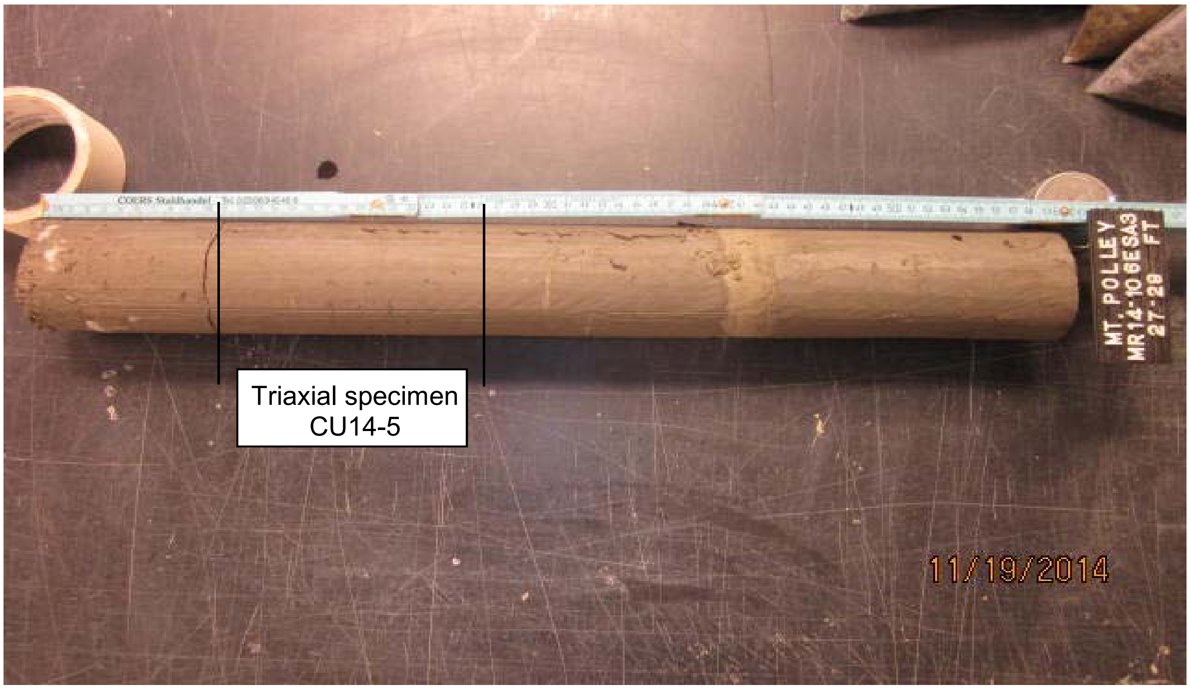


Mohr Circle at maximum Deviator Stress



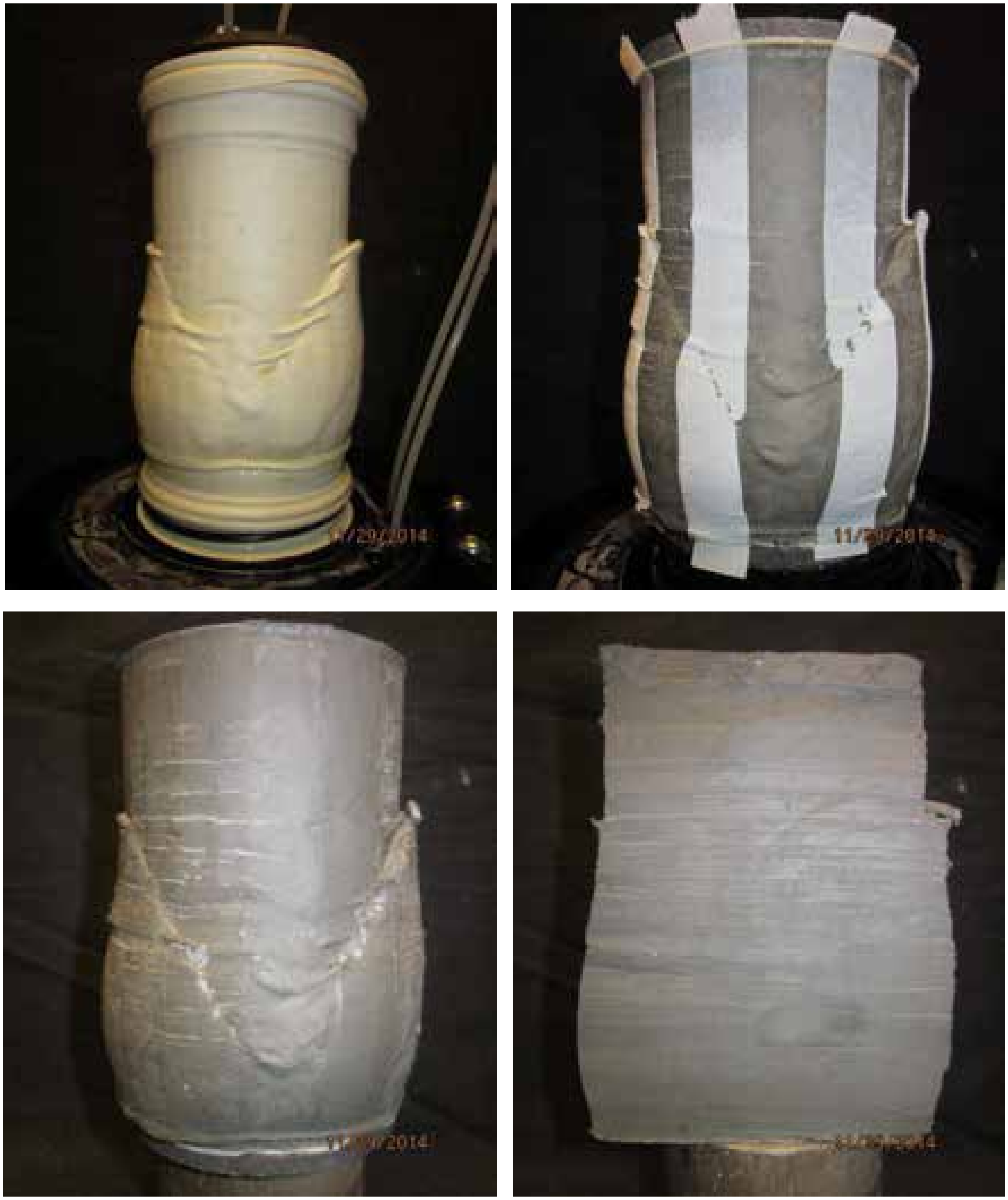
THURBER

CU14-5 @ 600 kPa Before Test



THURBER

CU14-5 @ 600 kPa After Test



CU14-5 @ 600 kPa After Test

Top

Middle

Bottom

PANEL COMMENT
SOIL UNIT: UPPER GLU

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-8

MR14-106C, Sa. 1B, 7.5 m / El. 921.0 m
Effective Confining Pressure = 75 kPa

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach

Report Date: Dec. 22, 2014
File Number: 15-3-280
Test Dates: Dec. 16 - 21, 2014

Index Testing Data

Gravel:	0.0%	Liquid Limit:	50
Sand:	0.2%	Plastic Limit:	20
Silt:	46.9%	Plasticity Index:	30
Clay:	52.9%	Sp. Gr. (assumed):	2.86

silty CLAY (CH), brown, thinly bedded, high plasticity

Specimen Data

	As Set Up	As Tested
Wet Density (kg/cu.m.):	1,850	1,883
Dry Density (kg/cu.m.):	1,335	1,358
Moisture Content:	38.6%	38.7%
Void Ratio:	1.142	1.106
Saturation:	97%	100%
Pore Press. Parameter B:	0.55	0.97

Stress/Strain Data

	Maximum Stress Ratio	Maximum Deviator Stress
Axial Strain (%):	0.82	0.82
Stress Ratio:	5.53	5.53
Deviator Stress (kPa):	106	106
Change in Pore Pressure (kPa):	51	51
Effective Confining Pressure (kPa):	23	23
Pore Pressure Parameter A:	0.48	0.48
Rate of Displacement (%/hour):	0.26	0.26

THURBER

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-8
MR14-106C, Sa. 1B, 7.5 m / El. 921.0 m
Effective Confining Pressure = 75 kPa

Original Sample

The original sample was a section of a 73 mm diameter Shelby tube sample. It was 180 mm long.

Test Specimen

The triaxial specimen was prepared by trimming the ends of the Shelby tube sample. The triaxial specimen was 155.35 mm long by 72.10 mm in diameter.

Test Apparatus

The specimen was mounted in a triaxial pressure chamber with 73 mm diameter end platens. Porous stone and filter paper disks were placed on both ends of the specimen. Filter paper strips were placed around the perimeter of the specimen to act as side drains. The specimen was enveloped in one latex membrane.

Test Procedure

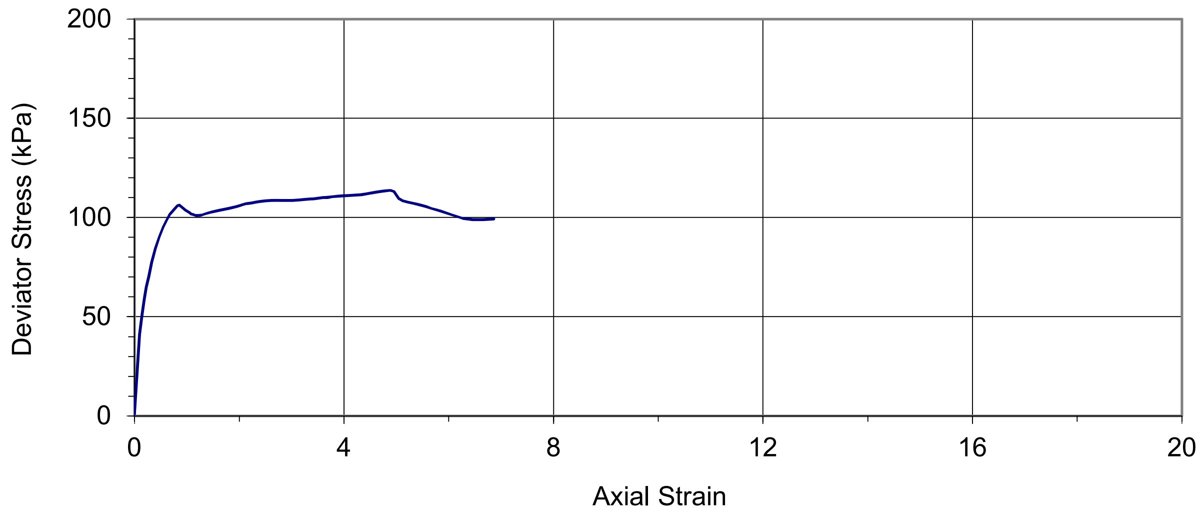
An initial cell pressure of 100 kPa resulted in a pore pressure response of 71 kPa (B=0.72). The cell pressure and back pressure were increased in a series of 100 kPa increments until B=0.97 (at 500 kPa cell pressure). This indicated that the specimen was saturated. The specimen was consolidated in one stage to the required effective confining pressure of 75 kPa. The back pressure valve was closed and axial loading was carried out until the deviator stress reached a peak and dropped off.

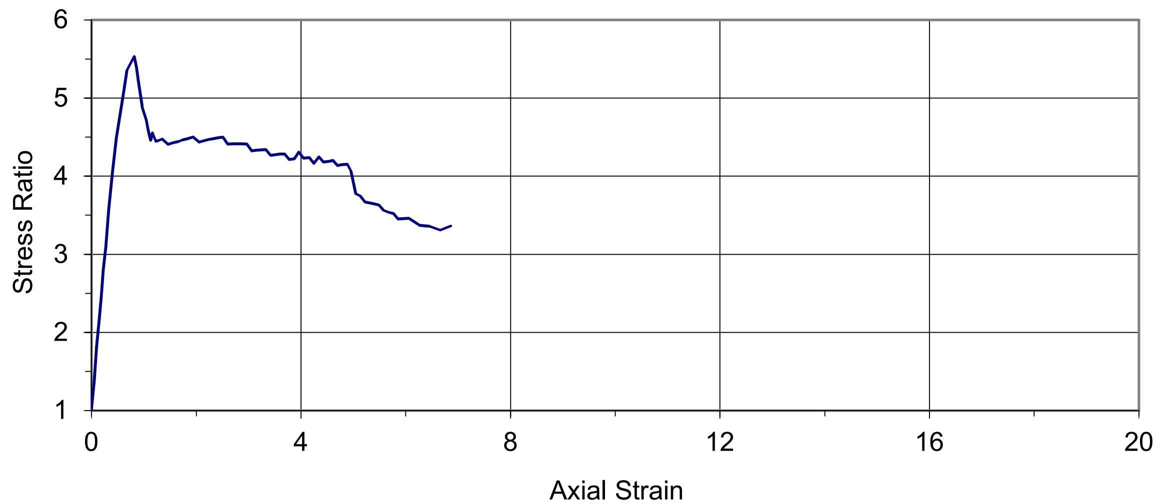
After Test

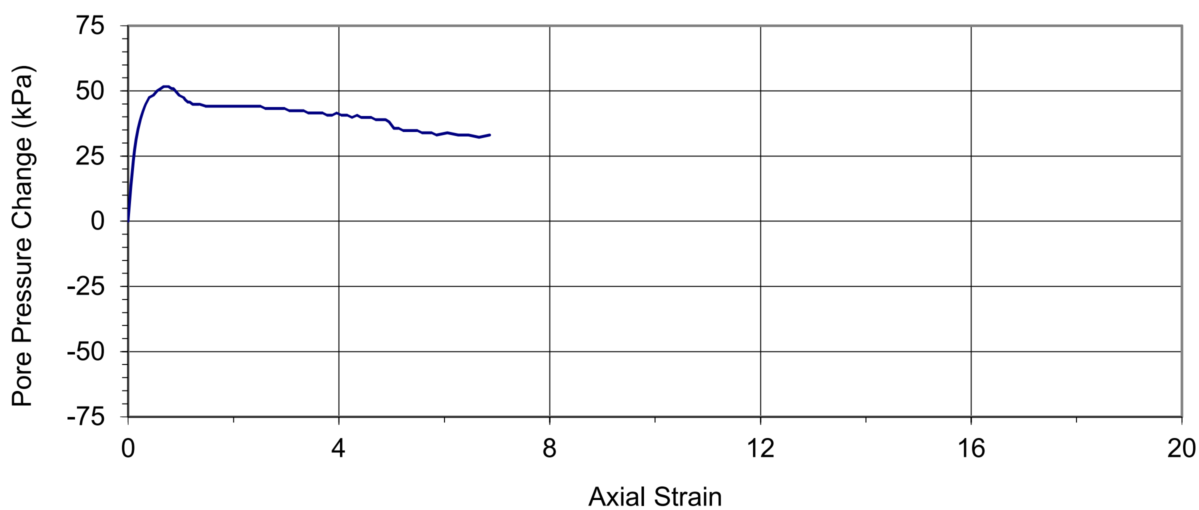
At the end of the test a two shear planes at an angle of 55^0 crossed each other in the middle of the specimen. The specimen was weighed and samples were taken for moisture content, hydrometer and Atterberg limits.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-8

Mount Polley Review Panel | Dec. 16 - 21, 2014
Mount Polley Tailings Storage Facility Breach | MR14-106C, Sa. 1B, 7.5 m / El. 921.0 m
File Number: 15-3-280 | Effective Confining Pressure = 75 kPa

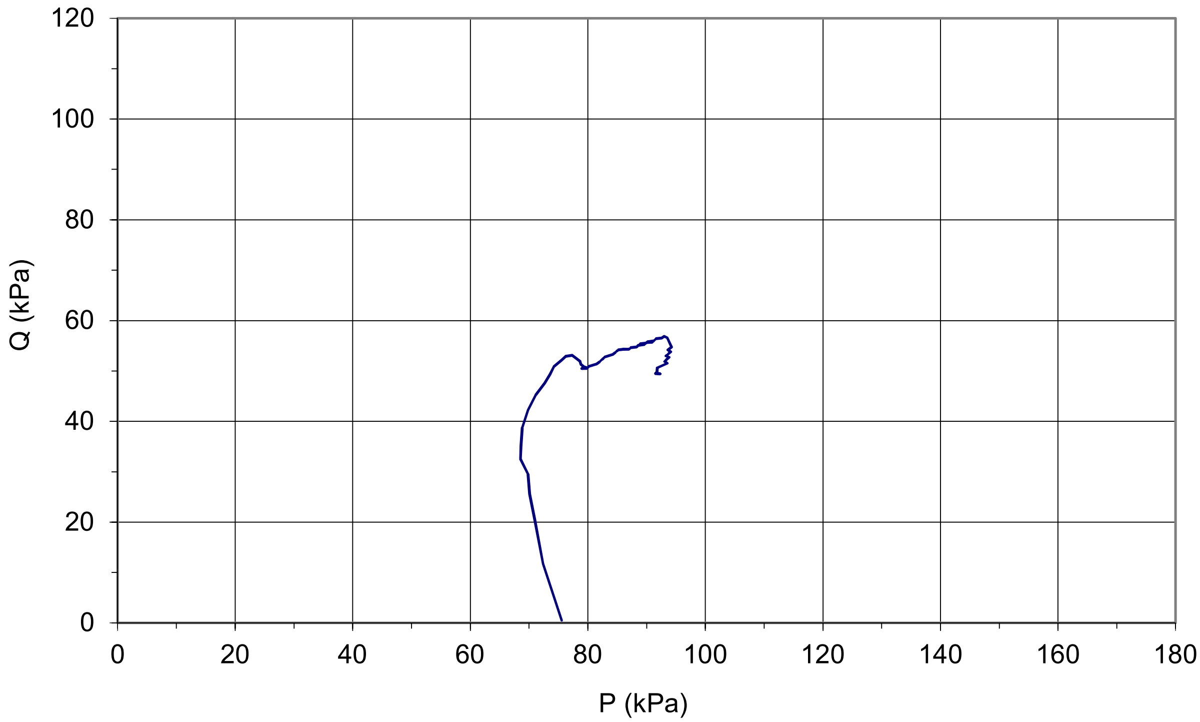




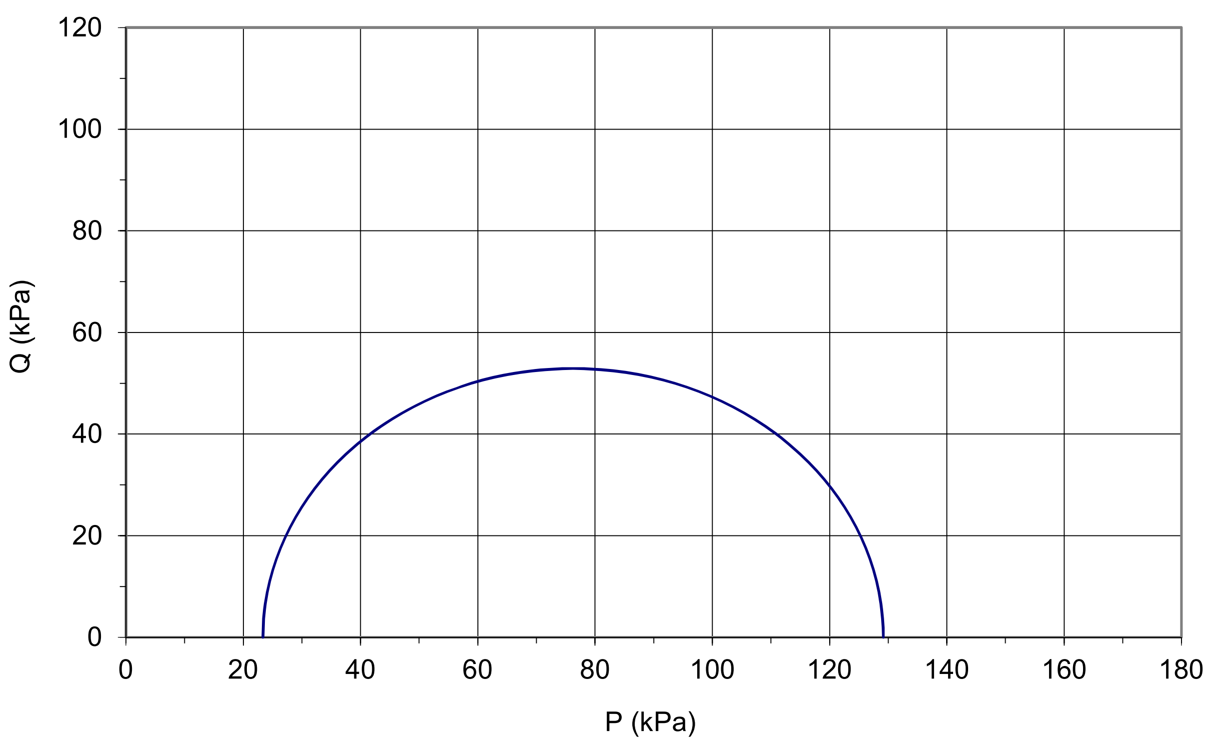


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT CU 14-8

Mount Polley Review Panel | Dec. 16 - 21, 2014
Mount Polley Tailings Storage Facility Breach | MR14-106C, Sa. 1B, 7.5 m / El. 921.0 m
File Number: 15-3-280 | Effective Confining Pressure = 75 kPa



Mohr Circle at maximum Deviator Stress



THURBER

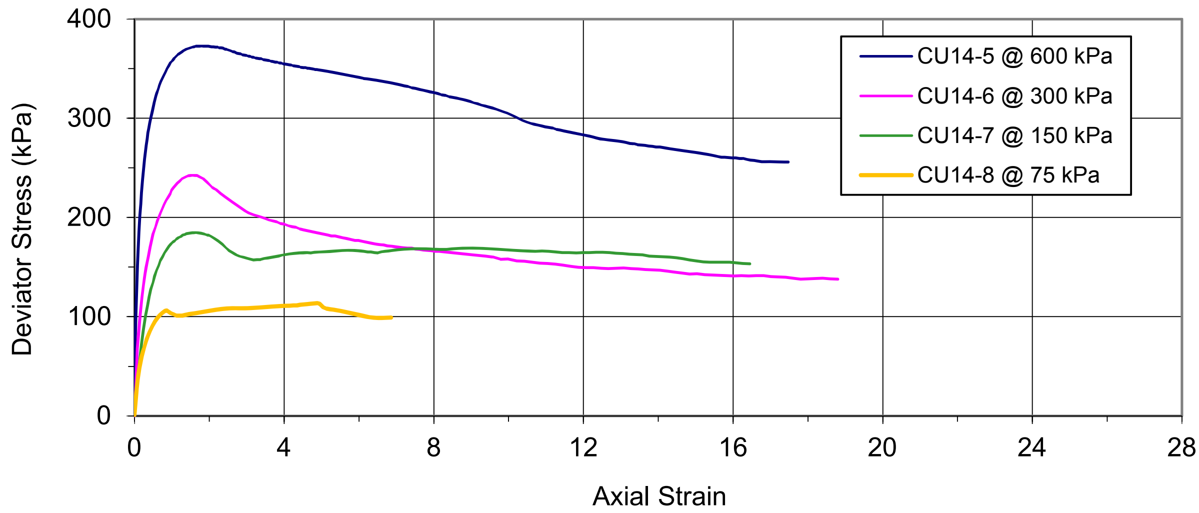
CU14-8 @ 75 kPa Before Test

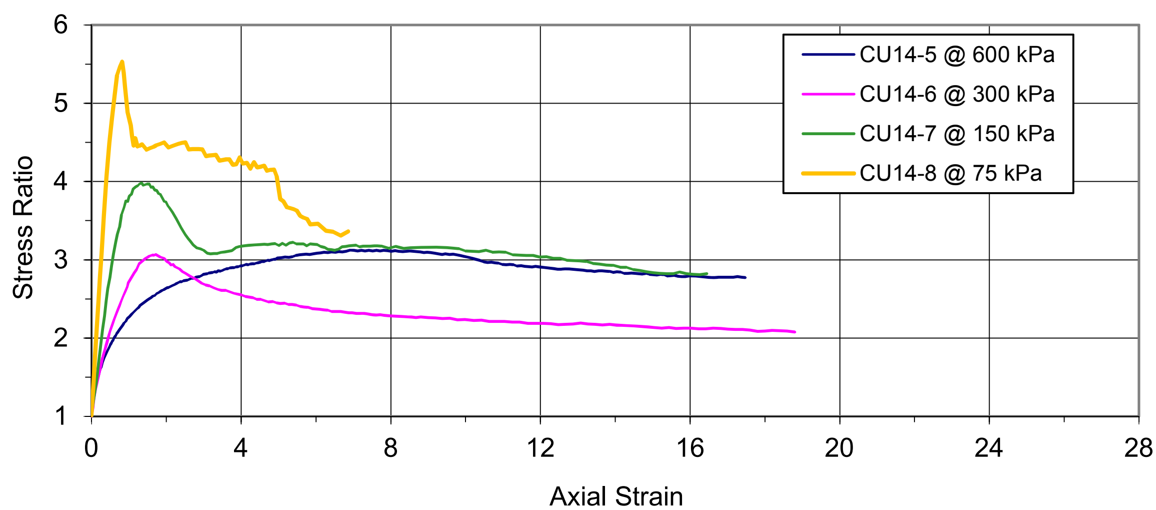
CU14-8 @ 75 kPa After Test

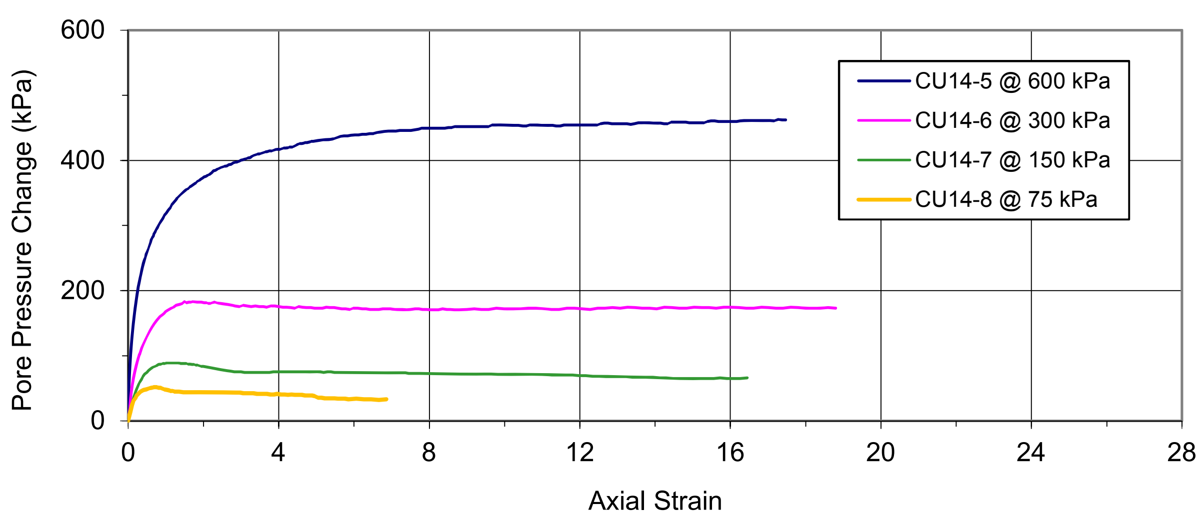
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

Nov. 21 to Dec. 21, 2014
MR14-106E, Sa. 3B, 3C, 2C and
MR14-106C, Sa. 1B



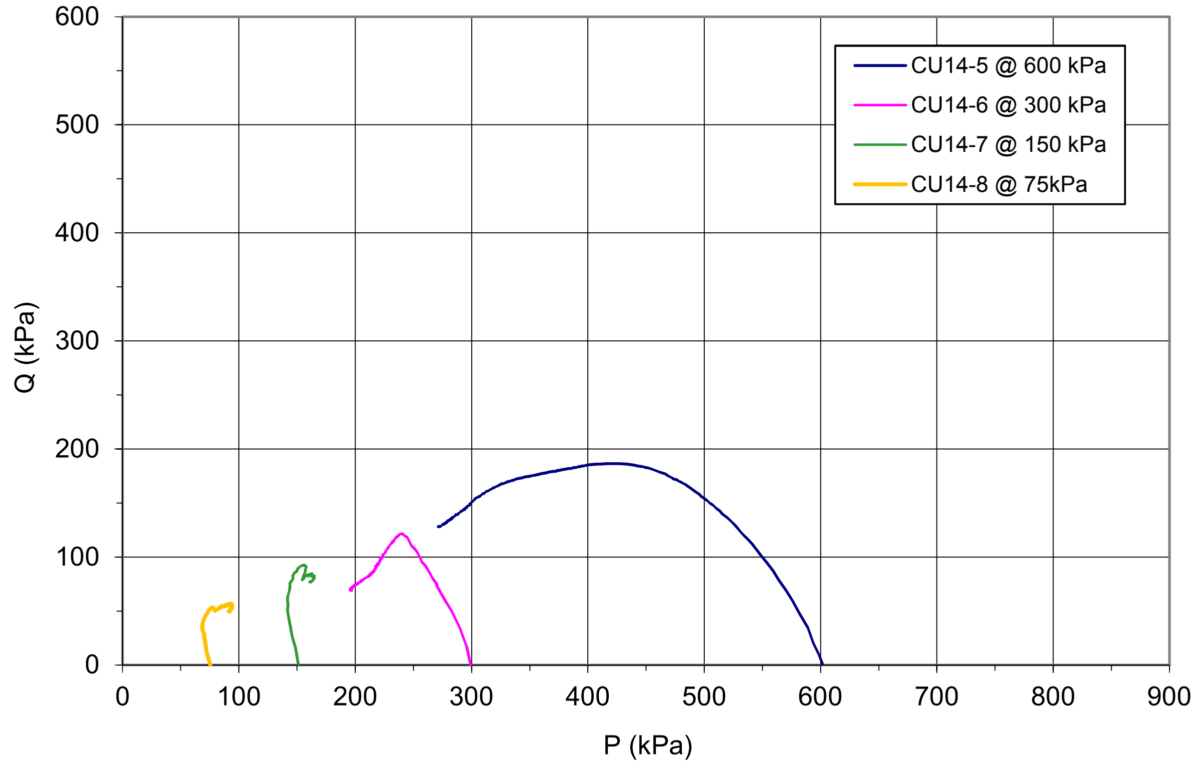


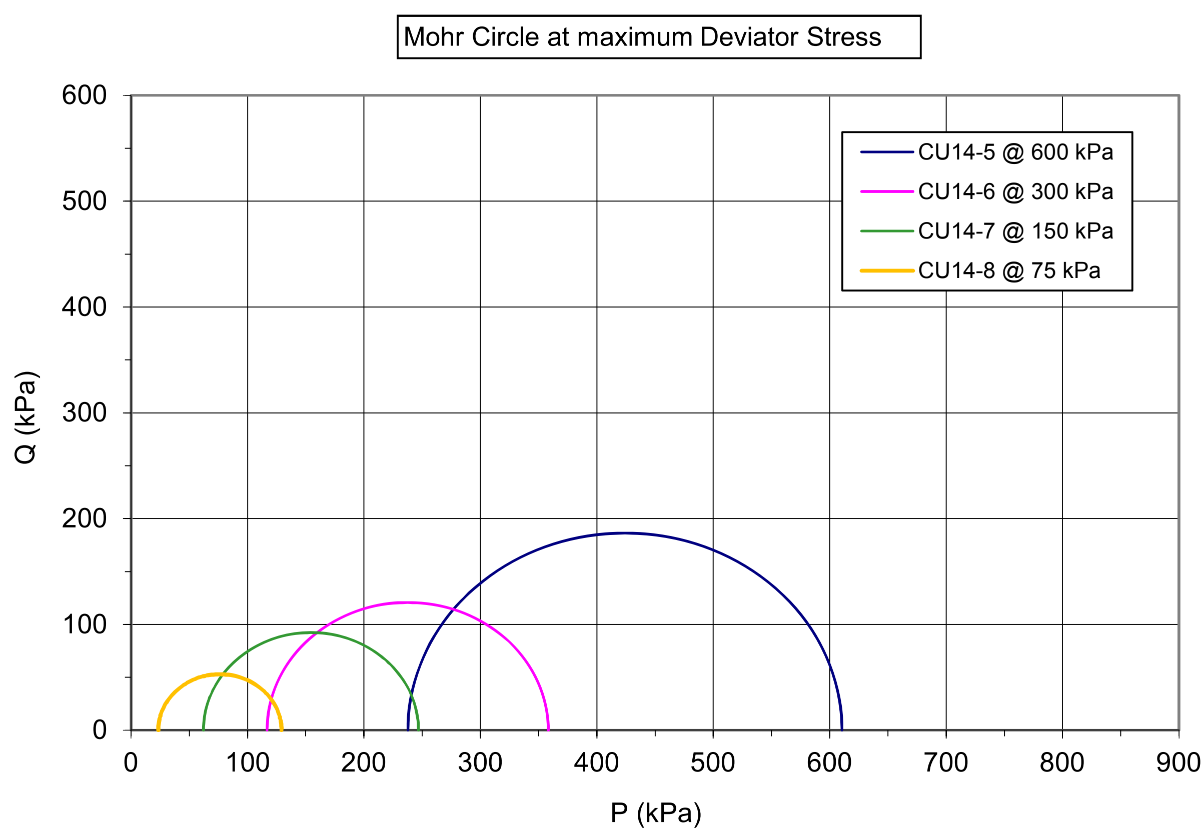


CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT

Mount Polley Review Panel
Mount Polley Tailings Storage Facility Breach
File Number: 15-3-280

Nov. 21 to Dec. 21, 2014
MR14-106E, Sa. 3B, 3C, 2C and
MR14-106C, Sa. 1B





MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Station:	CU
Sample No.:	SA 2B	Depth (m):	7.98

Specimen Data

Diameter (mm)	71.80
Height (mm)	146.60
Weight of container + sample (g)	1110.07
Weight of container (g)	0
Total Unit Weight (kN/m^3)	18.35
Dry Unit Weight (kN/m3)	14.11

Water Content

	Before Saturation	After Shear
Tin No.	64	C06
Weight of tin (g)	33.37	142.16
Tin + Wet weight (g)	86.82	1255.7
Tin + Dry weight (g)	74.48	976.65
Water Content (%)	30.0	33.4

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	12.3
Final vertical effective stress, σ'_1 (kPa)	150.8
Initial effective isotropic stress, σ'_3 (kPa)	12.3
Final effective isotropic stress, σ'_3 (kPa)	148.9
Pore Pressure (kPa)	553.9
Volume change during consolidation, ΔV_c (cm^3)	11.61
Initial height of specimen (cm)	14.66
Initial area of specimen (cm^2)	40.49
Initial volume of specimen (cm^3)	593.53
Initial void ratio, e_i	0.98
Final void ratio, e_i	0.92

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	0.99

Shear

Initial vertical effective stress, σ'_1 (kPa)	176.4
Initial Isotropic effective stress, σ'_3 (kPa)	50.0
Initial Pore Pressure (kPa)	663.7
Strain rate (%/hr)	0.4



Comments / Observations: assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	December 4, 2014	Date:	December 4, 2014	Date:	December 5, 2014

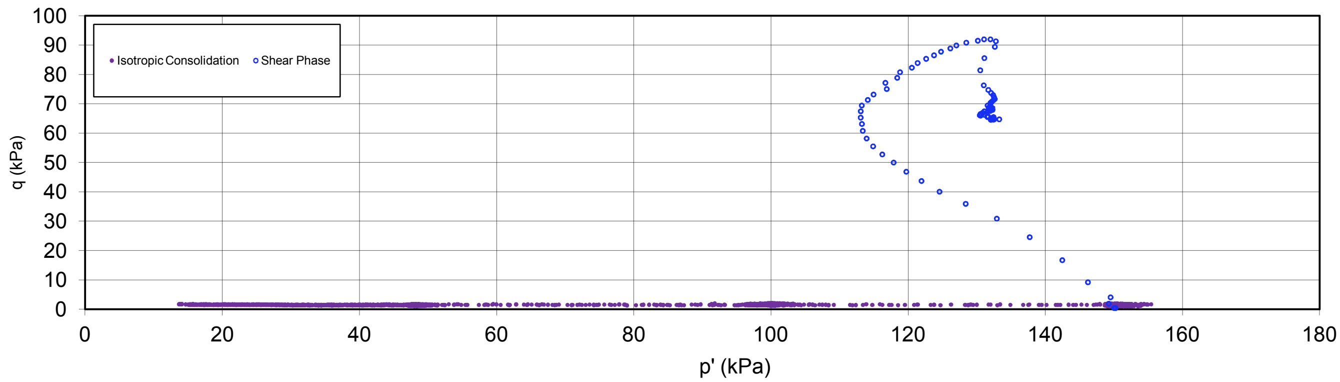
MEG TECHNICAL SERVICES

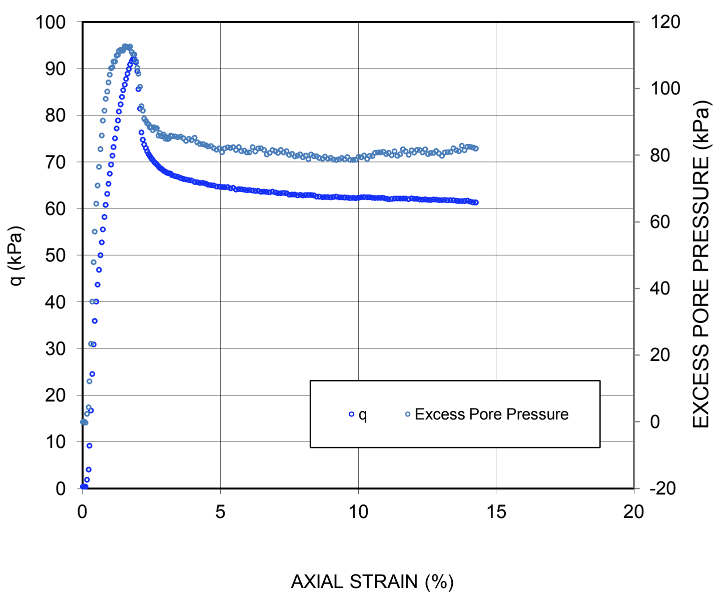
(A Division of MEG Consulting Limited)

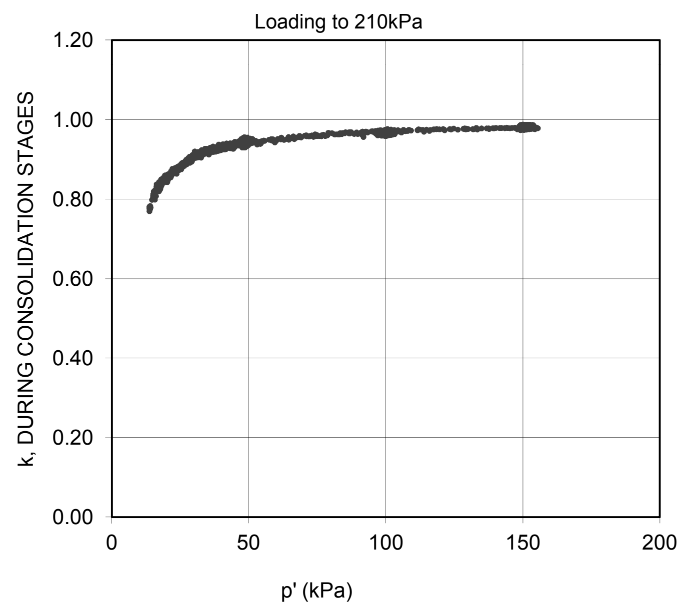
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Depth (m):	7.98
Sample No.:	SA 2B		

Initial Height (mm):	146.6	**Initial Water Content (%):**	30.02	**Final Water Content (%):**	33.44
Initial Diameter (mm):	71.8	**Initial Total Unit Weight (kN/m^3):**	18.35	**Final Total Unit Weight (kN/m^3):**	20.0
Weight of Specimen (g):	1110.07	**Initial Dry Unit Weight (kN/m^3):**	14.11	**Final Dry Unit Weight (kN/m^3):**	15.0
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e_i:**	0.98	**Final Void Ratio, e_f:**	0.92







Comments: Sample consolidated in three stages (50kPa, 100kPa and 150kPa)

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	December 4, 2014	Date:	December 4, 2014	Date:	December 5, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Station:	CU
Sample No.:	SA 2B	Depth (m):	8.13

Specimen Data

Diameter (mm)	72.12
Height (mm)	149.04
Weight of container + sample (g)	1113.07
Weight of container (g)	0
Total Unit Weight (kN/m^3)	17.94
Dry Unit Weight (kN/m3)	12.67

Water Content

	Before Saturation	After Shear
Tin No.	25	C06
Weight of tin (g)	34.65	206.46
Tin + Wet weight (g)	52.34	1311.77
Tin + Dry weight (g)	47.15	1021.7
Water Content (%)	41.5	35.6

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	0.99

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	17.3
Final vertical effective stress, σ'_1 (kPa)	303.5
Initial effective isotropic stress, σ'_3 (kPa)	17.3
Final effective isotropic stress, σ'_3 (kPa)	303.1
Pore Pressure (kPa)	548.0
Volume change during consolidation, ΔV_c (cm^3)	19.26
Initial height of specimen (cm)	14.90
Initial area of specimen (cm^2)	40.85
Initial volume of specimen (cm^3)	608.82
Initial void ratio, e_i	1.21
Final void ratio, e_i	1.13

Shear

Initial vertical effective stress, σ'_1 (kPa)	319.8
Initial Isotropic effective stress, σ'_3 (kPa)	226.5
Initial Pore Pressure (kPa)	668.1
Strain rate (%/hr)	0.4



Comments / Observations: assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	December 4, 2014	Date:	December 4, 2014	Date:	December 5, 2014

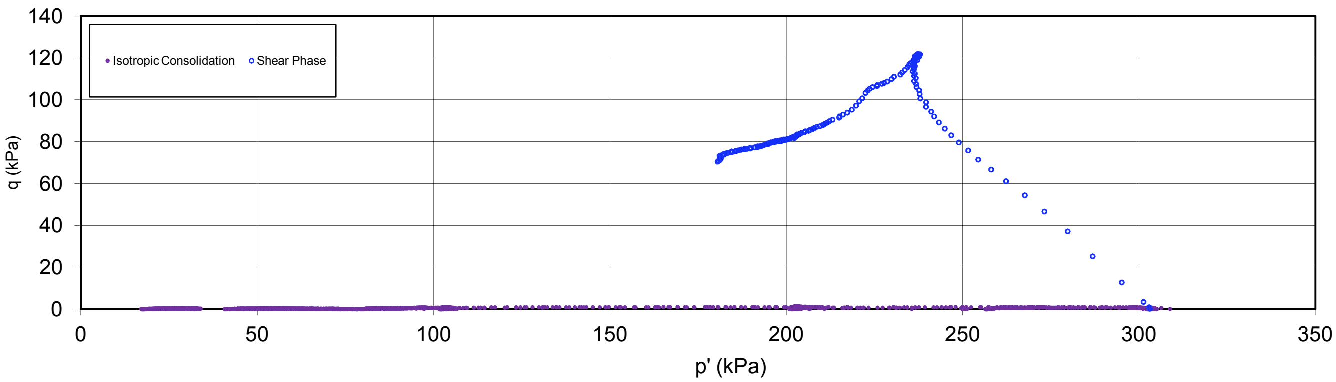
MEG TECHNICAL SERVICES

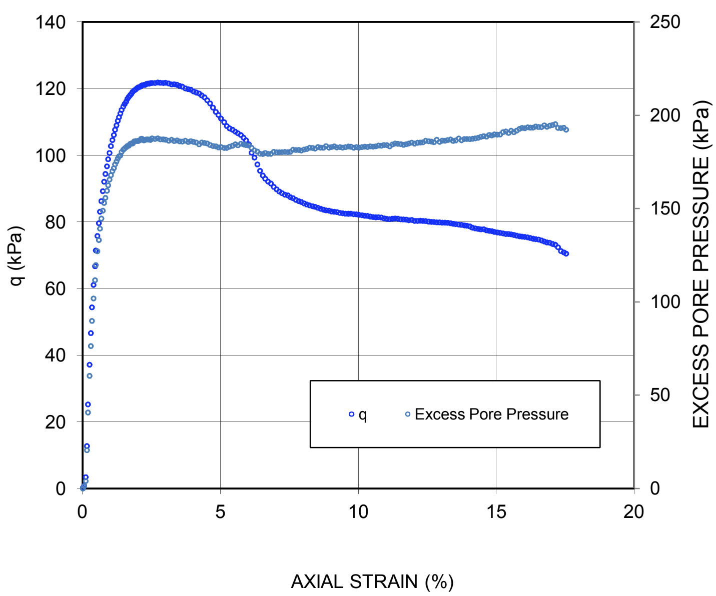
(A Division of MEG Consulting Limited)

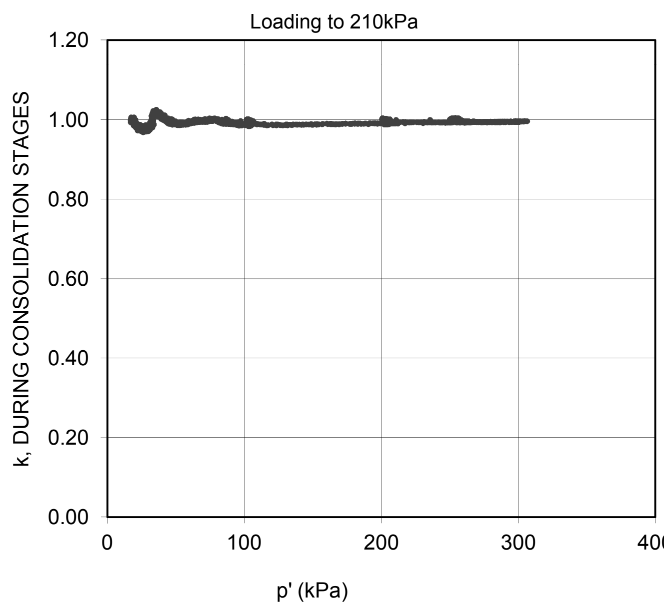
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Depth (m):	8.13
Sample No.:	SA 2B		

Initial Height (mm):	149.0	**Initial Water Content (%):**	41.52	**Final Water Content (%):**	35.58
Initial Diameter (mm):	72.1	**Initial Total Unit Weight (kN/m^3):**	17.94	**Final Total Unit Weight (kN/m^3):**	18.4
Weight of Specimen (g):	1113.07	**Initial Dry Unit Weight (kN/m^3):**	12.67	**Final Dry Unit Weight (kN/m^3):**	13.6
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e_i:**	1.21	**Final Void Ratio, e_i:**	1.13







Comments: Sample consolidated in three stages (100kPa, 200kPa and 300kPa)

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	December 4, 2014	Date:	December 4, 2014	Date:	December 5, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Station:	CU
Sample No.:	SA 2B	Depth (m):	8.28

Specimen Data

Diameter (mm)	71.54
Height (mm)	147.41
Weight of container + sample (g)	1110.75
Weight of container (g)	0
Total Unit Weight (kN/m^3)	18.39
Dry Unit Weight (kN/m3)	13.33

Water Content

	Before Saturation	After Shear
Tin No.	94	1
Weight of tin (g)	32.47	149.57
Tin + Wet weight (g)	61.55	1219.02
Tin + Dry weight (g)	53.55	944.03
Water Content (%)	38.0	34.6

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	14.5
Final vertical effective stress, σ'_1 (kPa)	613.4
Initial effective isotropic stress, σ'_3 (kPa)	14.5
Final effective isotropic stress, σ'_3 (kPa)	599.1
Pore Pressure (kPa)	551.3
Volume change during consolidation, ΔV_c (cm^3)	21.16
Initial height of specimen (cm)	14.74
Initial area of specimen (cm^2)	40.20
Initial volume of specimen (cm^3)	592.60
Initial void ratio, e_i	1.10
Final void ratio, e_i	1.02

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	1.00

Shear

Initial vertical effective stress, σ'_1 (kPa)	626.9
Initial Isotropic effective stress, σ'_3 (kPa)	613.7
Initial Pore Pressure (kPa)	557.8
Strain rate (%/hr)	0.4

Comments / Observations: assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	December 4, 2014	Date:	December 4, 2014	Date:	December 5, 2014

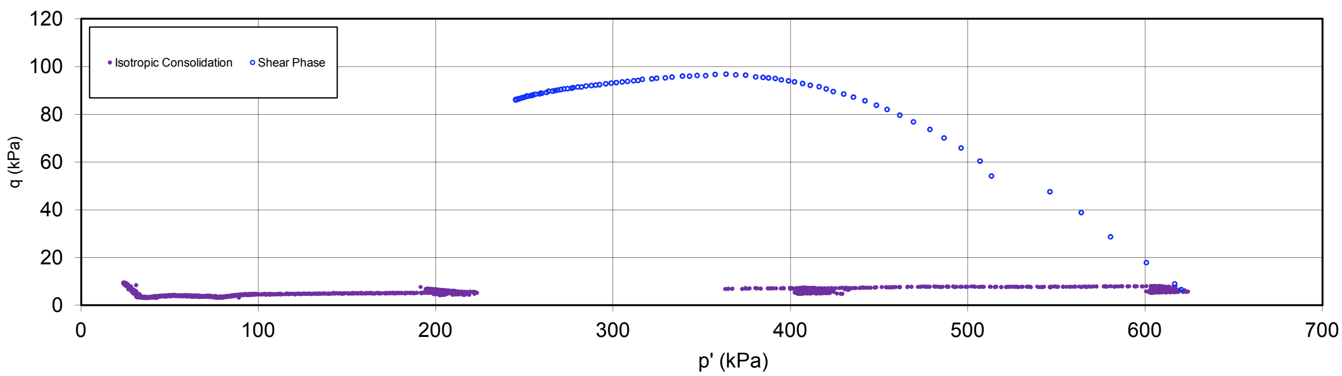
MEG TECHNICAL SERVICES

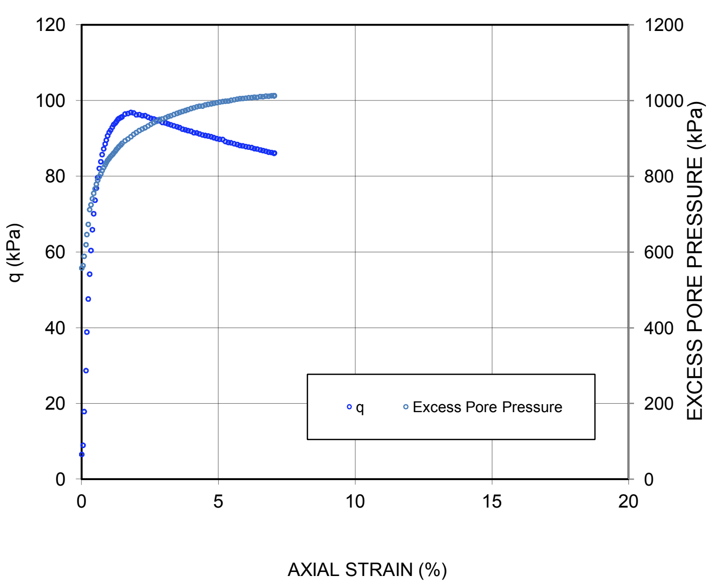
(A Division of MEG Consulting Limited)

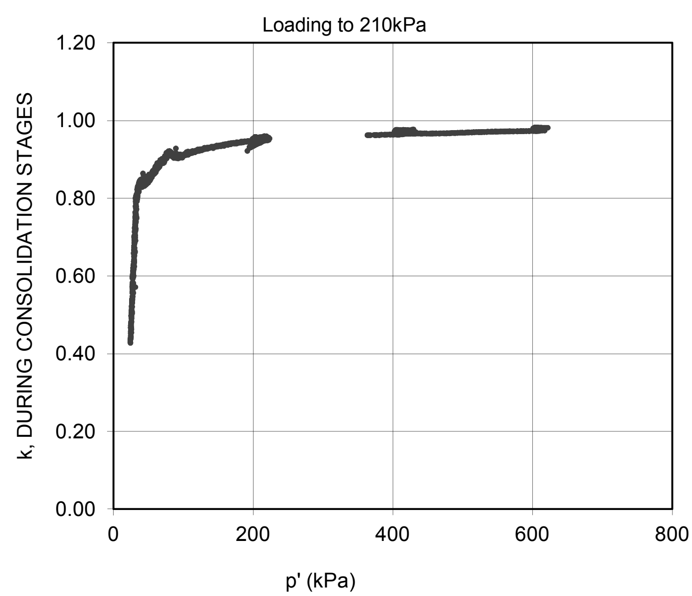
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	December 4, 2014
Borehole:	MR14-106F	Depth (m):	8.28
Sample No.:	SA 2B		

Initial Height (mm):	147.4	**Initial Water Content (%):**	37.95	**Final Water Content (%):**	34.61
Initial Diameter (mm):	71.5	**Initial Total Unit Weight (kN/m^3):**	18.39	**Final Total Unit Weight (kN/m^3):**	19.3
Weight of Specimen (g):	1110.75	**Initial Dry Unit Weight (kN/m^3):**	13.33	**Final Dry Unit Weight (kN/m^3):**	14.4
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e_i:**	1.10	**Final Void Ratio, e_f:**	1.02







Comments: Sample consolidated in three stages (200kPa, 400kPa and 600kPa)
Backpressure pumped maxed out overnight at 200 kPa. When the pump was drained, the stress jumped to 360kPa. Test had to be stopped early to avoid bending loading piston

Prepared By:	MF	Checked By:	PS	Approved By:	
Date:	December 4, 2014	Date:	December 4, 2014	Date:	

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 20, 2014
Borehole:	MR14-106G	Station:	CU
Sample No.:	SA 2B	Depth (m):	7.77

Specimen Data

Diameter (mm)	72.83
Height (mm)	157.60
Weight of container + sample (g)	1257.22
Weight of container (g)	0
Total Unit Weight (kN/m^3)	18.79
Dry Unit Weight (kN/m3)	13.60

Water Content

	Before Saturation	After Shear
Tin No.	18	H2
Weight of tin (g)	34.17	197.54
Tin + Wet weight (g)	108.53	457.73
Tin + Dry weight (g)	87.98	386.98
Water Content (%)	38.2	37.3

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	21.0
Final vertical effective stress, σ'_1 (kPa)	149.8
Initial effective isotropic stress, σ'_3 (kPa)	21.0
Final effective isotropic stress, σ'_3 (kPa)	150.0
Pore Pressure (kPa)	552.4
Volume change during consolidation, ΔV_c (cm^3)	10.54
Initial height of specimen (cm)	15.76
Initial area of specimen (cm^2)	41.66
Initial volume of specimen (cm^3)	656.47
Initial void ratio, e_i	1.06
Final void ratio, e_i	1.00

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	1.00

Shear

Initial vertical effective stress, σ'_1 (kPa)	150.0
Initial Isotropic effective stress, σ'_3 (kPa)	150.0
Initial Pore Pressure (kPa)	552.4
Strain rate (%/hr)	0.4



Comments / Observations: Test was stopped at 12.2% strain to avoid damaging the equipment
assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 20, 2014	Date:	November 20, 2014	Date:	November 21, 2014

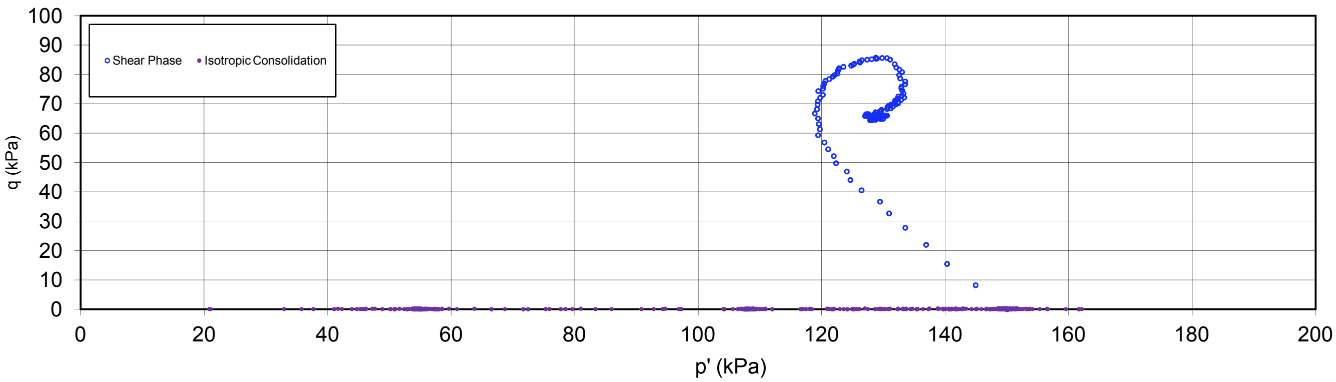
MEG TECHNICAL SERVICES

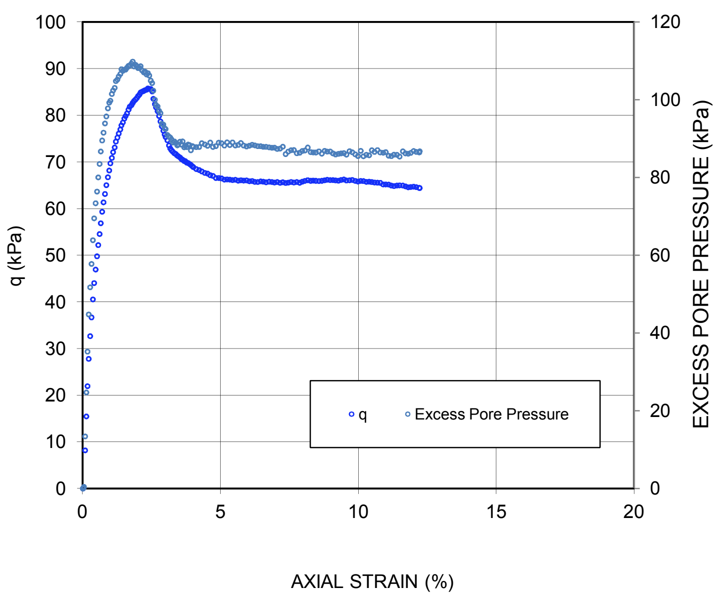
(A Division of MEG Consulting Limited)

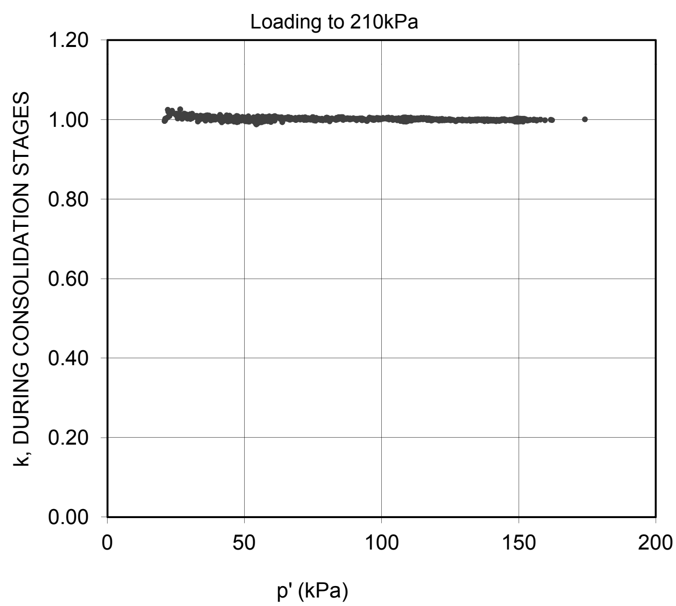
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 20, 2014
Borehole:	MR14-106G	Depth (m):	7.77
Sample No.:	SA 2B		

Initial Height (mm):	157.6	**Initial Water Content (%):**	38.19	**Final Water Content (%):**	37.35
Initial Diameter (mm):	72.8	**Initial Total Unit Weight (kN/m^3):**	18.79	**Final Total Unit Weight (kN/m^3):**	19.7
Weight of Specimen (g):	1257.22	**Initial Dry Unit Weight (kN/m^3):**	13.60	**Final Dry Unit Weight (kN/m^3):**	14.4
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e$_i$:**	1.06	**Final Void Ratio, e$_i$:**	1.00







Comments: Test was stopped at 12.2% strain to avoid damaging the equipment
Sample consolidated in three stages (50kPa, 100kPa and 150kPa)

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 20, 2014	Date:	November 20, 2014	Date:	November 21, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 21, 2014
Borehole:	MR14-106G	Station:	CU
Sample No.:	SA 2B	Depth (m):	7.97

Specimen Data

Diameter (mm)	35.66
Height (mm)	76.70
Weight of container + sample (g)	140.7
Weight of container (g)	0
Total Unit Weight (kN/m^3)	18.02
Dry Unit Weight (kN/m3)	13.46

Water Content

	Before Saturation	After Shear
Tin No.	29	C106
Weight of tin (g)	34.78	150.51
Tin + Wet weight (g)	92.63	290.54
Tin + Dry weight (g)	77.99	254.35
Water Content (%)	33.9	34.9

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	17.6
Final vertical effective stress, σ'_1 (kPa)	310.0
Initial effective isotropic stress, σ'_3 (kPa)	17.6
Final effective isotropic stress, σ'_3 (kPa)	302.7
Pore Pressure (kPa)	548.2
Volume change during consolidation, ΔV_c (cm^3)	2.31
Initial height of specimen (cm)	7.67
Initial area of specimen (cm^2)	9.99
Initial volume of specimen (cm^3)	76.61
Initial void ratio, e_i	1.08
Final void ratio, e_i	1.01

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	1.00

Shear

Initial vertical effective stress, σ'_1 (kPa)	0.0
Initial Isotropic effective stress, σ'_3 (kPa)	0.0
Initial Pore Pressure (kPa)	0.0
Strain rate (%/hr)	0.4

Comments / Observations: Test was stopped at 14.4% strain to avoid damaging the equipment
assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 21, 2014	Date:	November 21, 2014	Date:	November 22, 2014

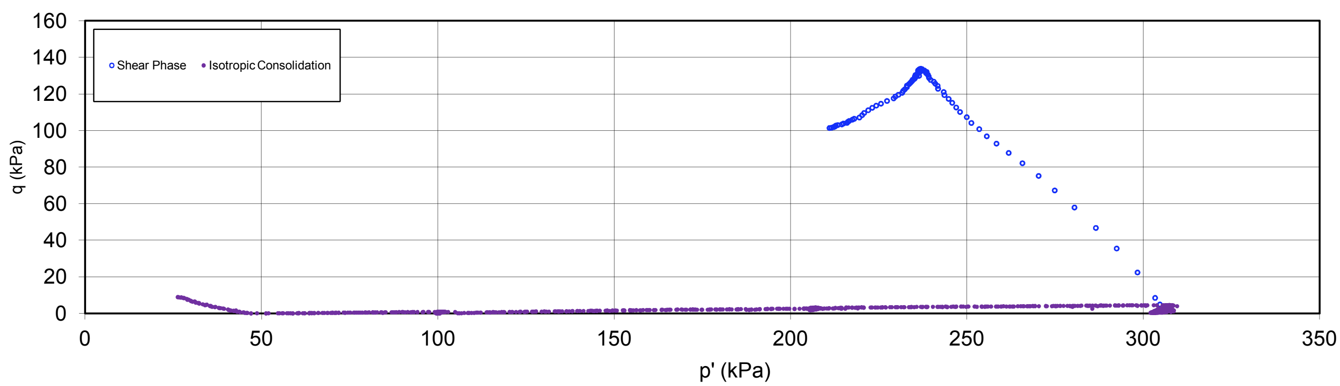
MEG TECHNICAL SERVICES

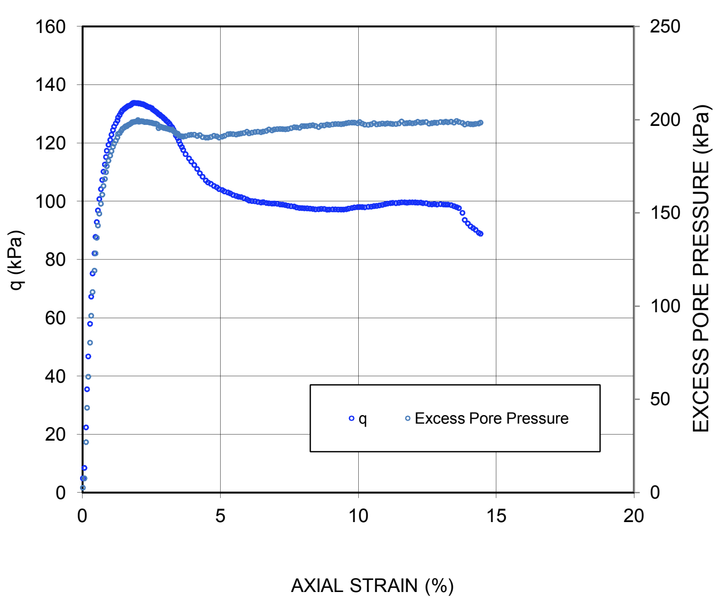
(A Division of MEG Consulting Limited)

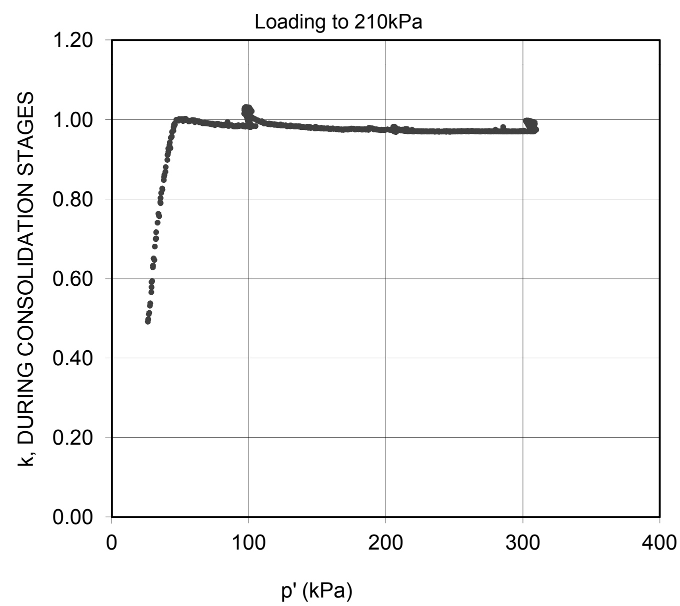
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 21, 2014
Borehole:	MR14-106G	Depth (m):	7.97
Sample No.:	SA 2B		

Initial Height (mm):	76.7	**Initial Water Content (%):**	33.88	**Final Water Content (%):**	34.85
Initial Diameter (mm):	35.7	**Initial Total Unit Weight (kN/m^3):**	18.02	**Final Total Unit Weight (kN/m^3):**	19.4
Weight of Specimen (g):	140.70	**Initial Dry Unit Weight (kN/m^3):**	13.46	**Final Dry Unit Weight (kN/m^3):**	14.4
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e$_i$:**	1.08	**Final Void Ratio, e$_i$:**	1.01







Comments: Test was stopped at 14.4% strain to avoid damaging the equipment
Sample consolidated in three stages (100kPa, 200kPa and 300kPa)

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 21, 2014	Date:	November 21, 2014	Date:	November 22, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 24, 2014
Borehole:	MR14-106G	Station:	Station 4
Sample No.:	Sa2B	Depth (m):	8.04

Specimen Data

Diameter (mm)	35.65
Height (mm)	84.33
Weight of container + sample (g)	152.4
Weight of container (g)	0
Total Unit Weight (kN/m^3)	17.76
Dry Unit Weight (kN/m3)	12.82

Water Content

	Before Saturation	After Shear
Tin No.	34	H2
Weight of tin (g)	35.35	197.54
Tin + Wet weight (g)	89.57	280.99
Tin + Dry weight (g)	74.5	257.85
Water Content (%)	38.5	38.4

Consolidation

Specific Gravity, Gs:	2.85
Initial vertical effective stress, σ'_1 (kPa)	14.2
Final vertical effective stress, σ'_1 (kPa)	622.3
Initial effective isotropic stress, σ'_3 (kPa)	14.2
Final effective isotropic stress, σ'_3 (kPa)	593.8
Pore Pressure (kPa)	586.0
Volume change during consolidation, ΔV_c (cm^3)	5.80
Initial height of specimen (cm)	8.43
Initial area of specimen (cm^2)	9.98
Initial volume of specimen (cm^3)	84.19
Initial void ratio, e_i	1.18
Final void ratio, e_i	1.06

Saturation

Vertical Seating Pressure (kPa)	13.8
Cell Pressure, σ_3 (kPa)	565.4
Back Pressure (kPa)	551.6
Effective Stress (kPa)	13.8
Pore pressure coefficient, B	1.00

Shear

Initial vertical effective stress, σ'_1 (kPa)	552.8
Initial Isotropic effective stress, σ'_3 (kPa)	532.1
Initial Pore Pressure (kPa)	612.9
Strain rate (%/hr)	0.4



Comments / Observations: assumed Gs of 2.85 as requested by Thurber

Performed By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 24, 2014	Date:	November 25, 2014	Date:	November 26, 2014

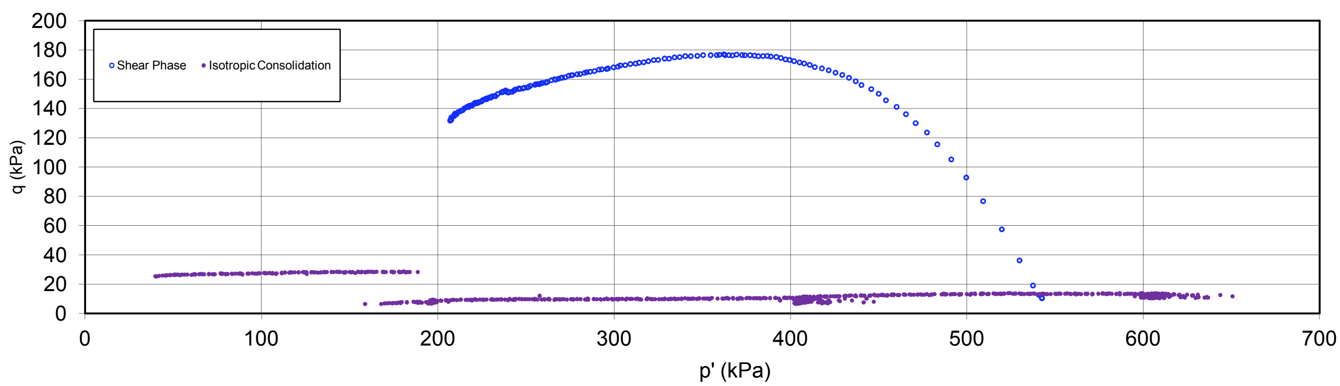
MEG TECHNICAL SERVICES

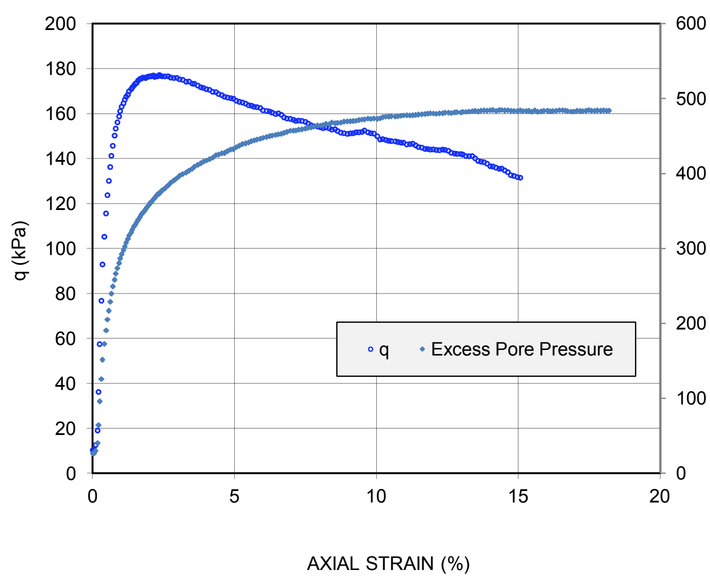
(A Division of MEG Consulting Limited)

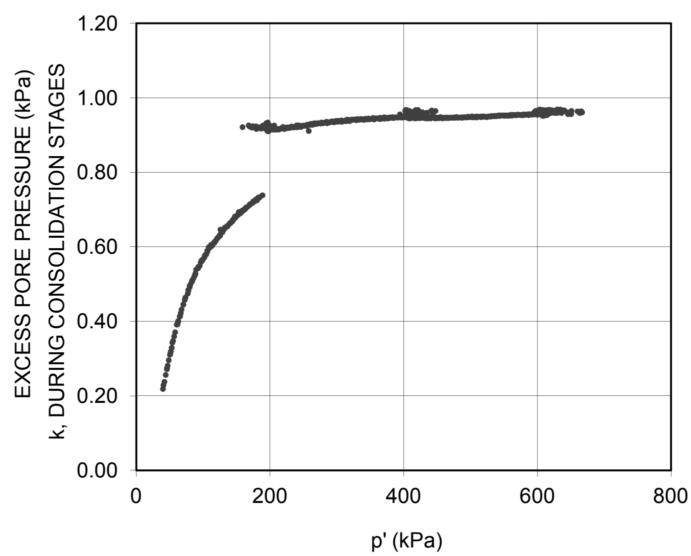
Consolidated-Undrained Triaxial Compression Test
(ASTM D 4767)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 24, 2014
Borehole:	MR14-106G	Depth (m):	8.04
Sample No.:	Sa2B		

Initial Height (mm):	84.3	**Initial Water Content (%):**	38.49	**Final Water Content (%):**	38.37
Initial Diameter (mm):	35.7	**Initial Total Unit Weight (kN/m^3):**	17.76	**Final Total Unit Weight (kN/m^3):**	19.8
Weight of Specimen (g):	152.40	**Initial Dry Unit Weight (kN/m^3):**	12.82	**Final Dry Unit Weight (kN/m^3):**	14.3
Specific Gravity, Gs:	2.85	**Initial Void Ratio, e$_i$:**	1.18	**Final Void Ratio, e$_i$:**	1.06







Comments: Sample consolidated in three stages (200kPa, 400kPa and 600kPa)

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 24, 2014	Date:	November 25, 2014	Date:	November 26, 2014

Appendix E
Attachment 5
Direct Simple Shear Test Data

Panel Direct Simple Shear Test Data Summary

Sample	Sample Depth (m)	Sample Elevation (m)	Oedometer sig' p (kPa)	W/C (%)	PI	Initial Confining Stress (kPa)	OCR	Initial Shear Stress (kPa)	Shear Bias	Peak Undrained Strength Ratio	Strain at Peak Strength	Undrained Strength Ratio at 20% Strain	Inferred Soil Unit	Notes
14-106A-Sa1C-T1	7.6	921.2	442	43	31	600	1.00	0	0%	0.22	10%	0.18	Upper GLU	Sample partially disturbed due to sampling overlap with field vane
14-106A-Sa1C-T2	7.6	921.1	442	37	31	600	1.00	60	10%	0.23	small		Upper GLU	
14-106A-Sa1C-T3	7.6	921.1	442	38	31	600	1.00	120	20%	0.26	small	0.22	Upper GLU	
14-106A-Sa1C-T4	7.7	921.1	442	33	31	300	1.47	60	20%	0.28	5%	0.25	Upper GLU	
14-106C-Sa1B-T1	7.4	921.2	454	44	33	600	1.00	180	30%	N/A	N/A	N/A	Upper GLU	Sample sheared when attempting to apply shear bias
14-106C-Sa1B-T2	7.3	921.2	454	43	33	600	1.00	150	25%	0.27	1%	0.15	Upper GLU	
14-106C-Sa1B-T3	7.3	921.2	454	39	33	600	1.00	60	10%	0.21	8%	0.17	Upper GLU	
14-106G-Sa2B-T1	7.8	920.9	510	44	21	600	1.00	60	10%	0.21	7%	0.17	Upper GLU	
14-106G-SaB-T2	8.1	920.6	510	38	21	600	1.00	120	20%	0.26	small	0.22	Upper GLU	
14-107-Sa6C-T1	7.1	921.5	330	44	23	300	1.10	30	10%	0.27	5%	0.22	Upper GLU	
14-107-Sa6C-T2	7.2	921.5	330	43	23	300	1.10	30	10%	0.25	6%	0.20	Upper GLU	
14-107A-Sa1A-T1	7.4	920.9	516	43	34	600	1.00	0	0%	0.21	9%	0.15	Upper GLU	
14-107A-Sa1A-T2	7.3	921.0	516	42	34	600	1.00	0	0%	0.20	9%	0.18	Upper GLU	
14-107A-Sa7	12.0	916.3	701	22	15	600	1.2	0	0%	0.30	10%	0.25	Lower Tills (Lower GLU)	
14-109-Sa6B	12.4	916.6	750	22	13	300	2.5	30	10%	0.42	7%	0.35	Lower Tills (Lower GLU)	
14-110-Sa6C	12.4	916.3	794	21	15	300	2.6	30	10%	0.27	7%	0.22	Lower Tills (Lower GLU)	
14-113-Sa4B	6.5	922.9	380	13	7	300	1.3	30	10%	0.43	N/A	0.49	Upper Till	Undefined peak. Draft results

	Peak Undrained Strength Ratio	Strain at Peak Strength	Undrained Strength Ratio at 20% Strain
Average Upper GLU (no shear bias)	0.21	9%	0.17
Average Upper GLU (10% shear bias)	0.23	5%	0.19
Average Upper GLU (>=20% shear bias)	0.27	3%	0.21
Average Upper GLU (all data)	0.24	7%	0.19

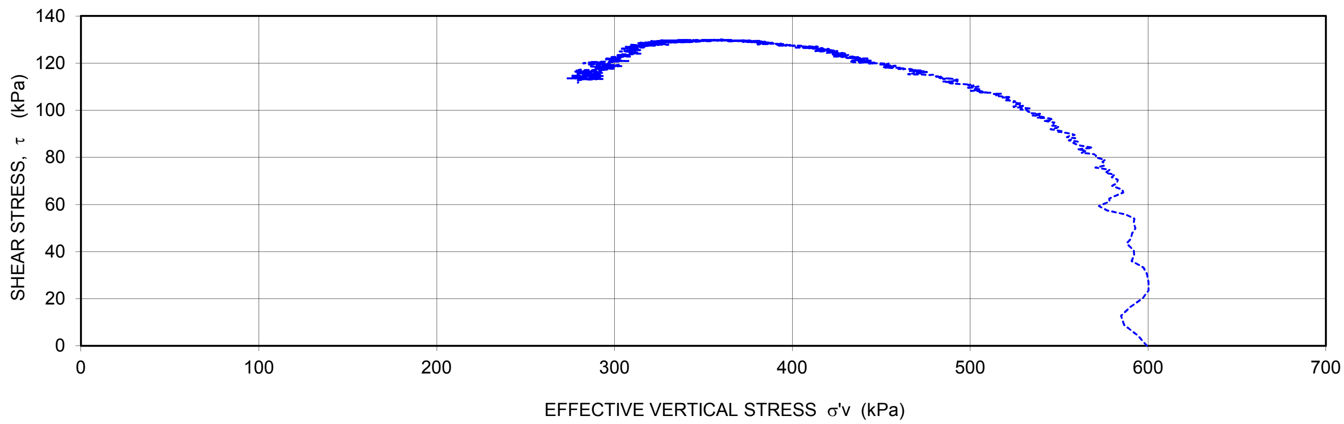
MEG TECHNICAL SERVICES

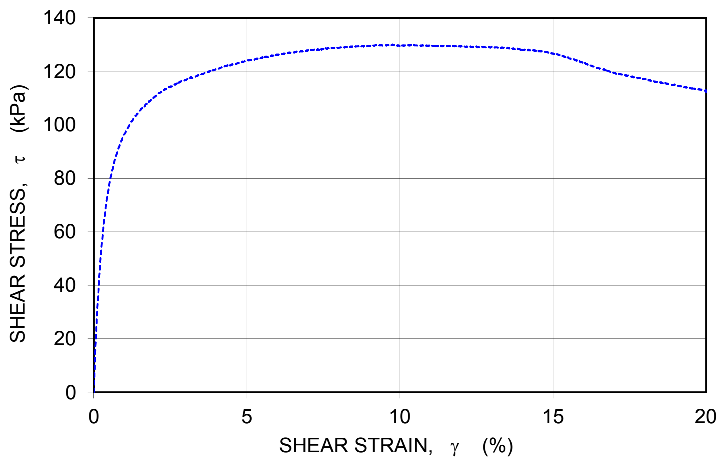
(A Division of MEG Consulting Limited)

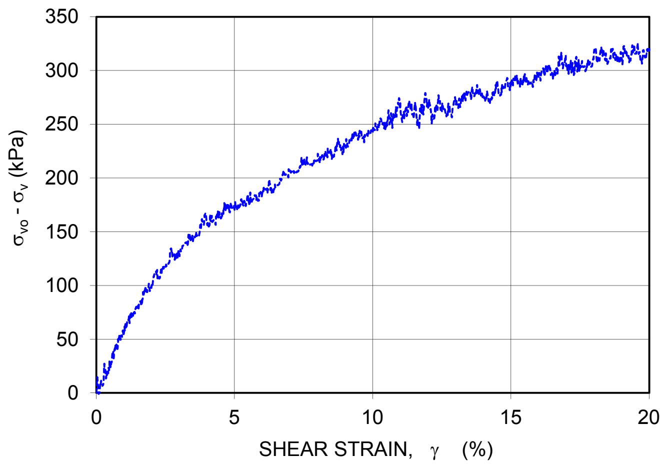
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 4, 2014
Borehole:	MR14-106A	Depth (m):	7.58
Sample No.:	Sa1C - T1	Station:	DSS1

Initial Height (mm):	23.3	**Weight of Specimen (g):**	180.90	**Initial Void Ratio, e_o:**	1.22
Diameter of Ring (mm):	73.3	**Total Unit Weight (kN/m^3):**	18.06	**Final Void Ratio, e_f:**	0.93
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	12.62	**Natural Water Content (%):**	43.1
Final Water Content (%):	32.4	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume			
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)
Sa1C - T1	7.70	18.1	600

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 10, 2014	Date:	November 10, 2014	Date:	November 11, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 4, 2014
Borehole:	MR14-106A	Depth (m):	7.58
Sample No.:	Sa1C - T1	Station:	DSS1

Sample Pictures

Sample in ring assembly after shear

Sample after test. Location of possible lab vane visible in the middle section of the sample. The top portion odf the sample was stuck to the top porous stone and revealed the lab vane test location. MEG was unaware a vane test was performed at the test location.

Cross section of the sample after the test was completed. Lamination of sample visiblte.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 10, 2014	Date:	November 10, 2014	Date:	November 11, 2014

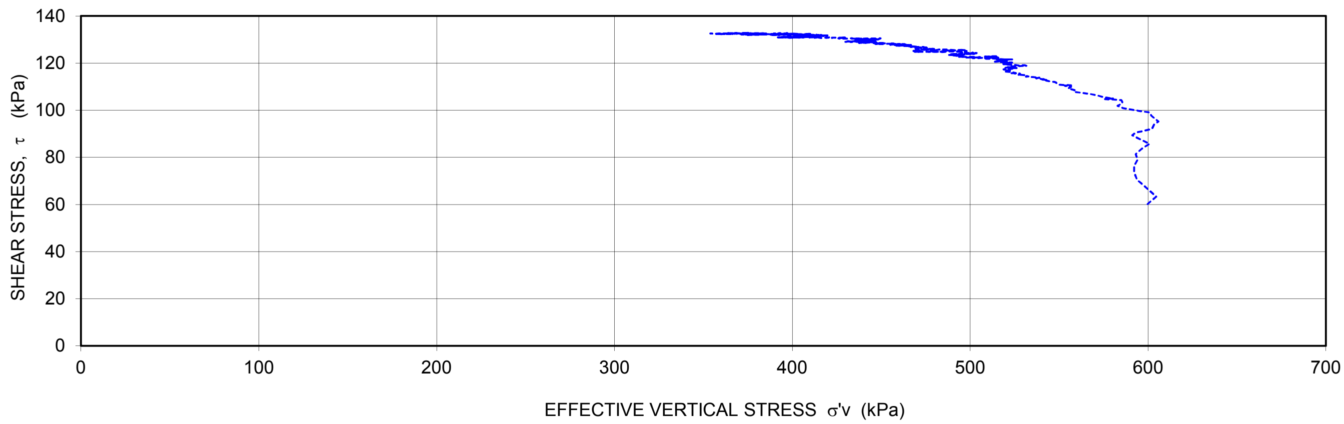
MEG TECHNICAL SERVICES

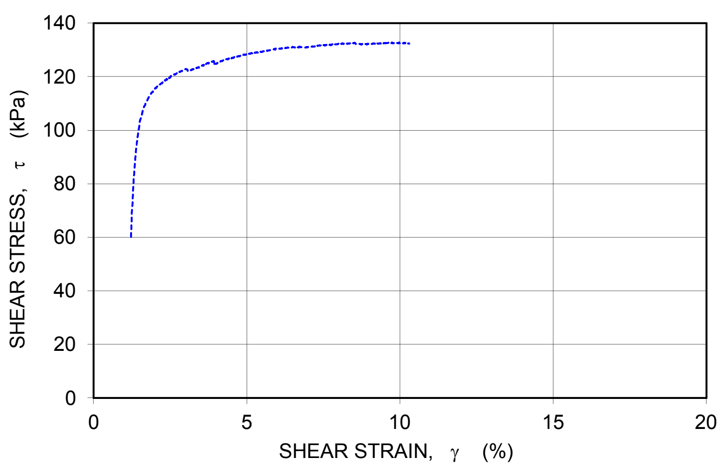
(A Division of MEG Consulting Limited)

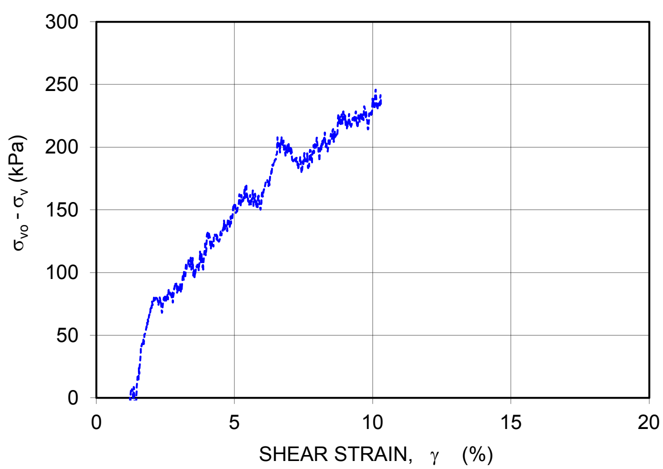
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 19, 2014
Borehole:	MR14-106A	Depth (m):	7.61
Sample No.:	Sa1C - T2	Station:	DSS1

Initial Height (mm):	23.4	**Weight of Specimen (g):**	182.86	**Initial Void Ratio, e_o:**	1.10
Diameter of Ring (mm):	73.2	**Total Unit Weight (kN/m^3):**	18.21	**Final Void Ratio, e_f:**	0.84
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	13.34	**Natural Water Content (%):**	36.6
Final Water Content (%):	30.7	**Initial Degree of Saturation, Sr (%):**	95.1	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1C - T2	7.76	18.2	600	60

Comments: Assumed Gs of 2.85 as instructed by Thurber
Equipment error stopped the test at 10% strain

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 19, 2014	Date:	November 19, 2014	Date:	November 20, 2014

MEG TECHNICAL SERVICES
(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 19, 2014
Borehole:	MR14-106A	Depth (m):	7.61
Sample No.:	Sa1C - T2	Station:	DSS1

Sample Pictures

Cross section of the sample after the test was completed. Lamination of sample visiblte.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 19, 2014	Date:	November 19, 2014	Date:	November 20, 2014

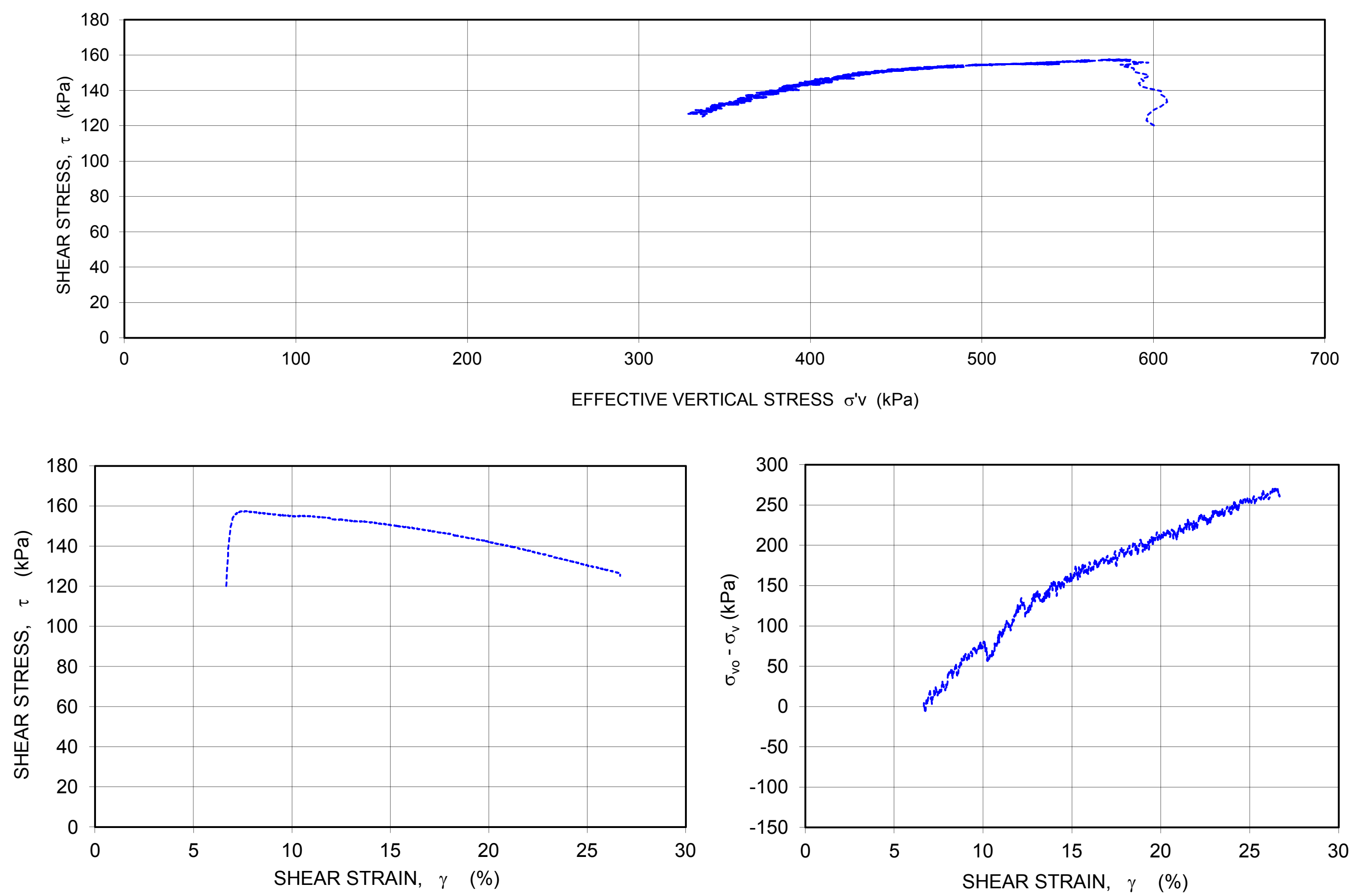
MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 20, 2014
Borehole:	MR14-106A	Depth (m):	7.64
Sample No.:	Sa1C - T3	Station:	DSS1

Initial Height (mm):	23.4	**Weight of Specimen (g):**	181.51	**Initial Void Ratio, e_o:**	1.13
Diameter of Ring (mm):	73.0	**Total Unit Weight (kN/m^3):**	18.16	**Final Void Ratio, e_f:**	0.85
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	13.14	**Natural Water Content (%):**	38.2
Final Water Content (%):	34.4	**Initial Degree of Saturation, Sr (%):**	96.6	**Final Degree of Saturation, Sr (%):**	>100



Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1C - T3	7.82	18.2	600	120

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 10, 2014	Date:	November 10, 2014	Date:	November 11, 2014

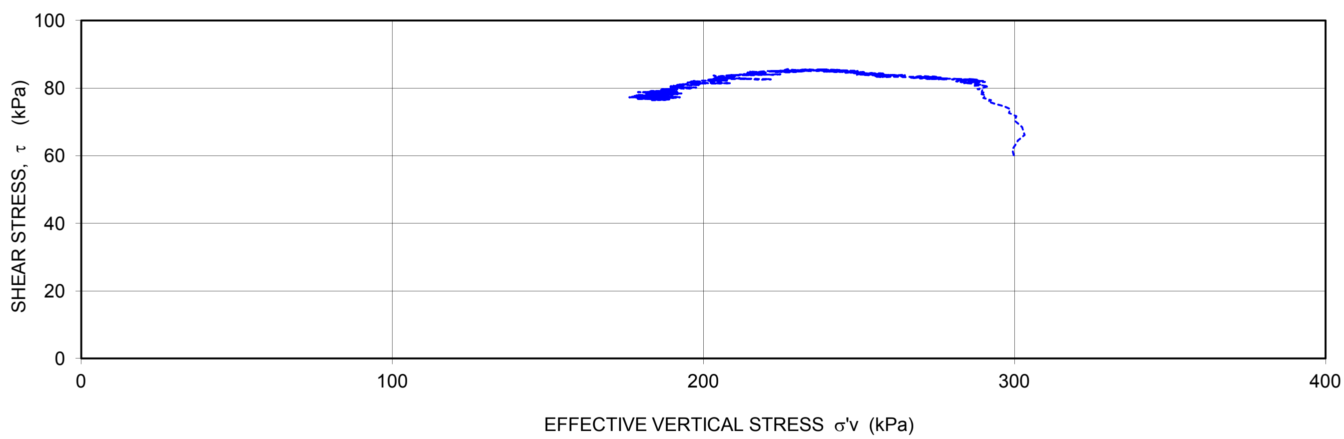
MEG TECHNICAL SERVICES

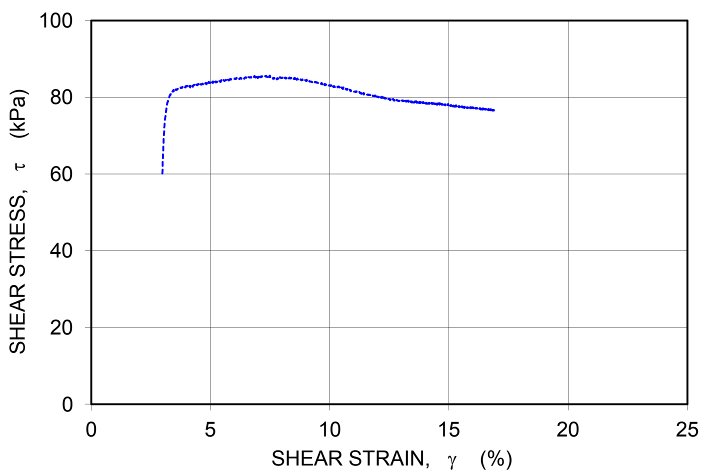
(A Division of MEG Consulting Limited)

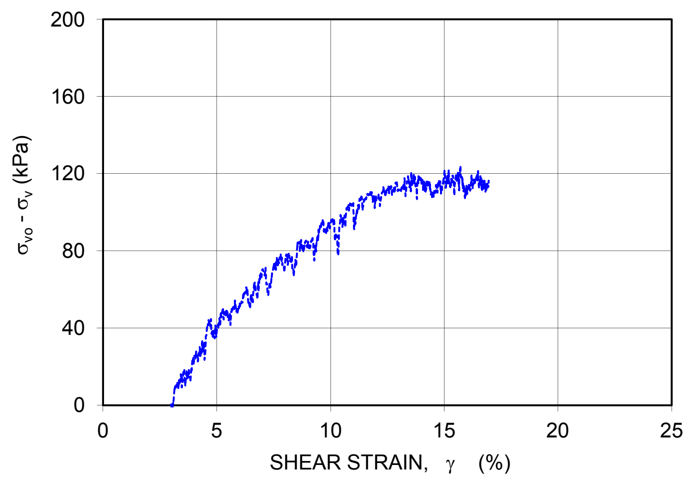
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 27, 2014
Borehole:	MR14-106A	Depth (m):	7.67
Sample No.:	Sa1C - T4	Station:	DSS1

Initial Height (mm):	20.0	**Weight of Specimen (g):**	153.39	**Initial Void Ratio, e_o:**	1.07
Diameter of Ring (mm):	73.0	**Total Unit Weight (kN/m^3):**	18.01	**Final Void Ratio, e_f:**	0.90
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	13.53	**Natural Water Content (%):**	33.1
Final Water Content (%):	36.6	**Initial Degree of Saturation, Sr (%):**	88.4	**Final Degree of Saturation, Sr (%):**	> 100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1C - T4	7.87	18.0	300	60

Comments: Assumed Gs of 2.85 as instructed by Thurber
Equipment error stopped the test at 17% strain

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 27, 2014	Date:	December 1, 2014	Date:	December 2, 2014

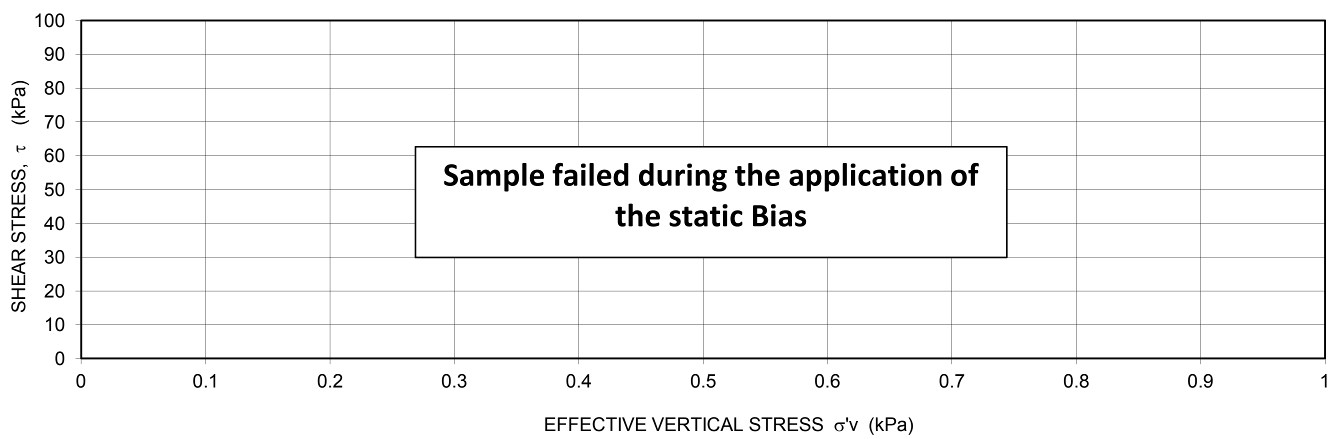
MEG TECHNICAL SERVICES

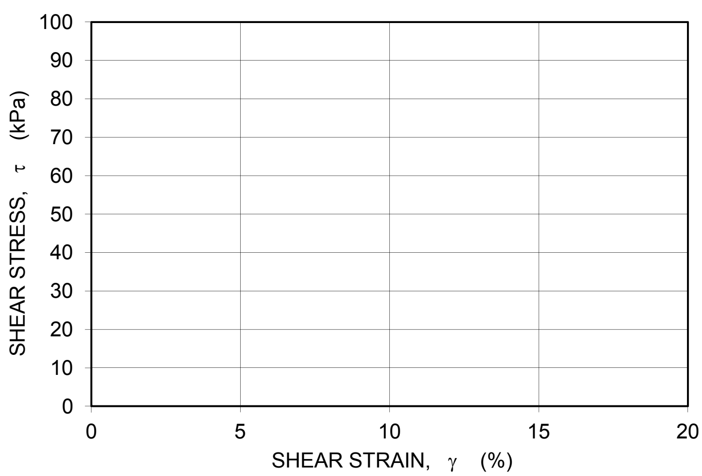
(A Division of MEG Consulting Limited)

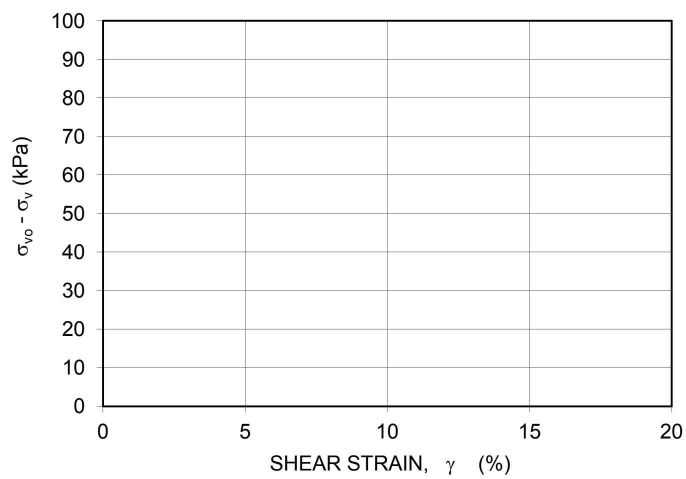
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Revie	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 28, 2014
Borehole:	MR14-106C	Depth (m):	7
Sample No.:	Sa1B - T3	Station:	Static DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	134.68	**Initial Void Ratio, e_o:**	-
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	16.99	**Final Void Ratio, e_f:**	-
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	11.84	**Natural Water Content (%):**	43.6
Final Water Content (%):	-	**Initial Degree of Saturation, Sr (%):**	91.2	**Final Degree of Saturation, Sr (%):**	-







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1B - T3	7.41	17.0	600	180

Comments: Assumed GS of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 28, 2014	Date:	December 1, 2014	Date:	December 2, 2014

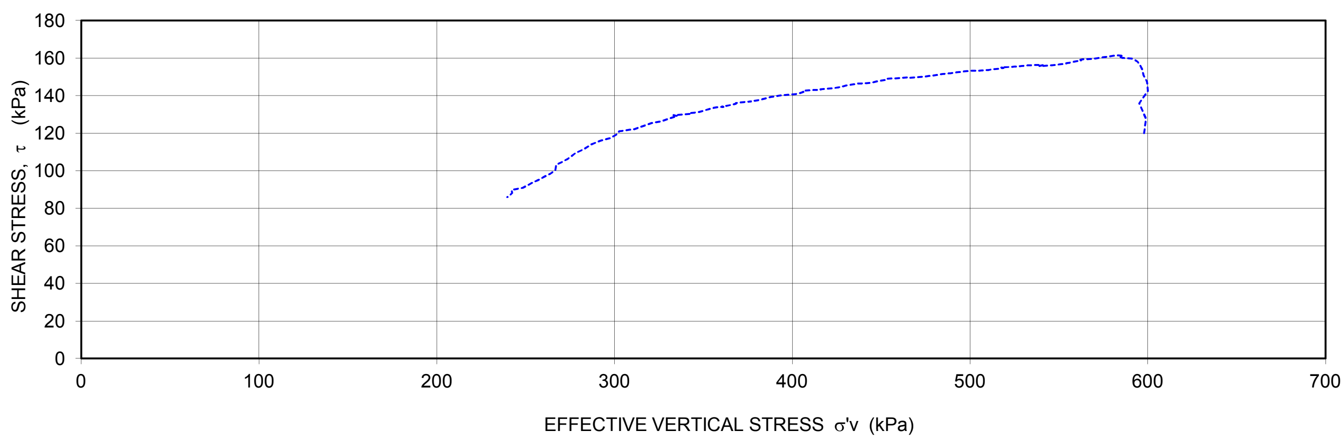
MEG TECHNICAL SERVICES

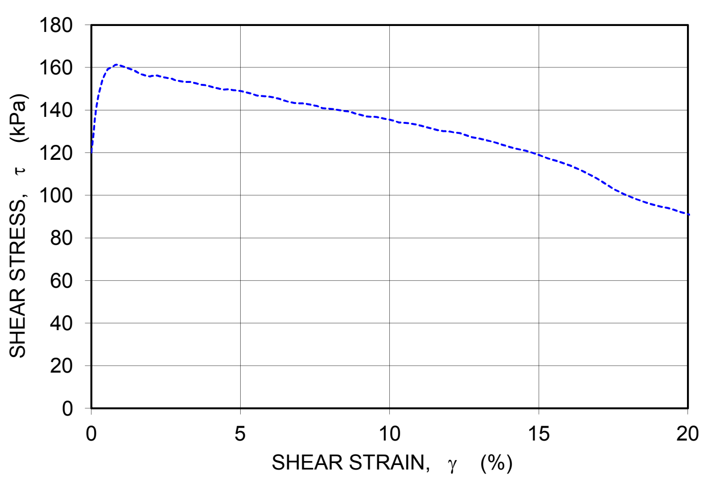
(A Division of MEG Consulting Limited)

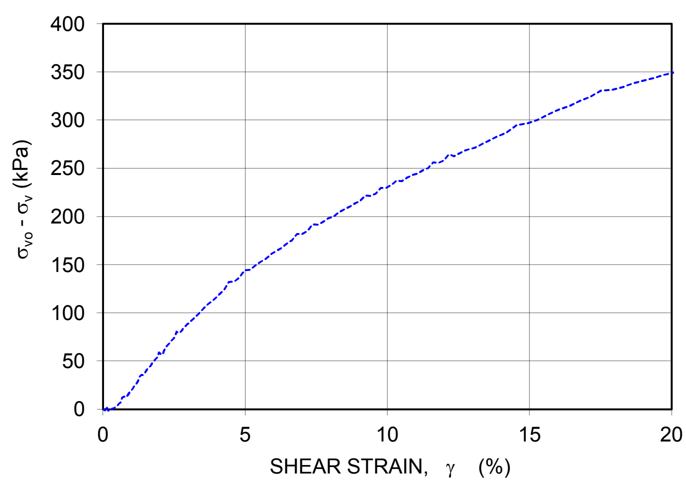
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Revie	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 28, 2014
Borehole:	MR14-106C	Depth (m):	7.31
Sample No.:	Sa1B - T2	Station:	Static DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	138.47	**Initial Void Ratio, e_o:**	1.29
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	17.47	**Final Void Ratio, e_f:**	0.88
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	12.20	**Natural Water Content (%):**	43.2
Final Water Content (%):	34.9	**Initial Degree of Saturation, Sr (%):**	95.3	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1B - T2	7.38	17.5	600	150

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 28, 2014	Date:	December 1, 2014	Date:	December 2, 2014

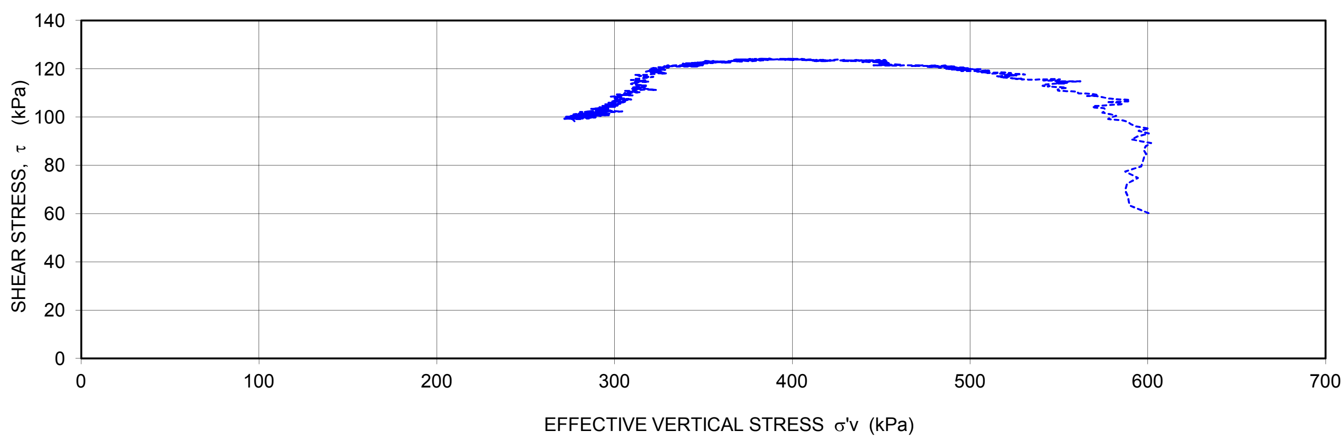
MEG TECHNICAL SERVICES

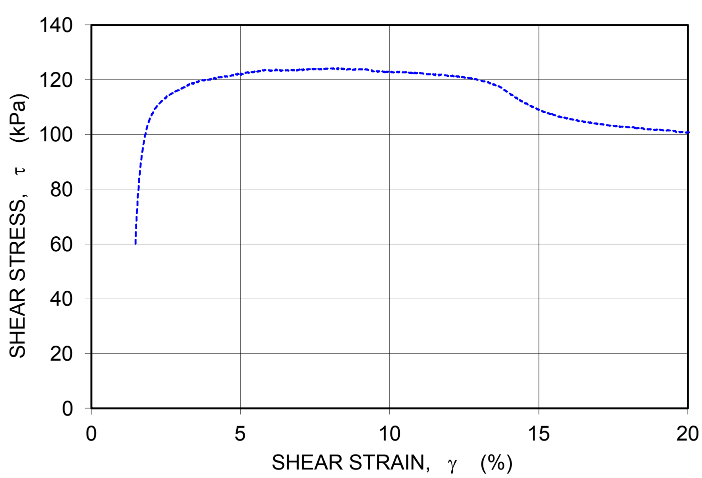
(A Division of MEG Consulting Limited)

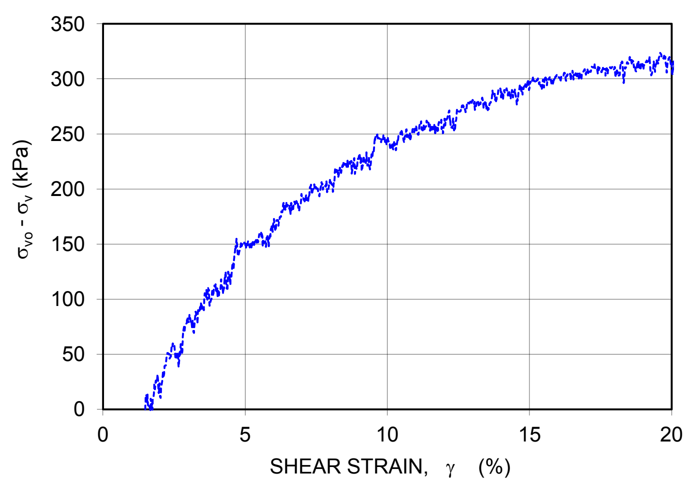
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Revie	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 28, 2014
Borehole:	MR14-106C	Depth (m):	7.34
Sample No.:	Sa1B - T3	Station:	DSS1

Initial Height (mm):	23.4	**Weight of Specimen (g):**	178.02	**Initial Void Ratio, e_o:**	1.18
Diameter of Ring (mm):	73.0	**Total Unit Weight (kN/m^3):**	17.83	**Final Void Ratio, e_f:**	0.94
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	12.83	**Natural Water Content (%):**	38.9
Final Water Content (%):	34.9	**Initial Degree of Saturation, Sr (%):**	94.1	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa1B - T3	7.41	17.8	600	60

Comments: Assumed GS of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 28, 2014	Date:	December 1, 2014	Date:	December 2, 2014

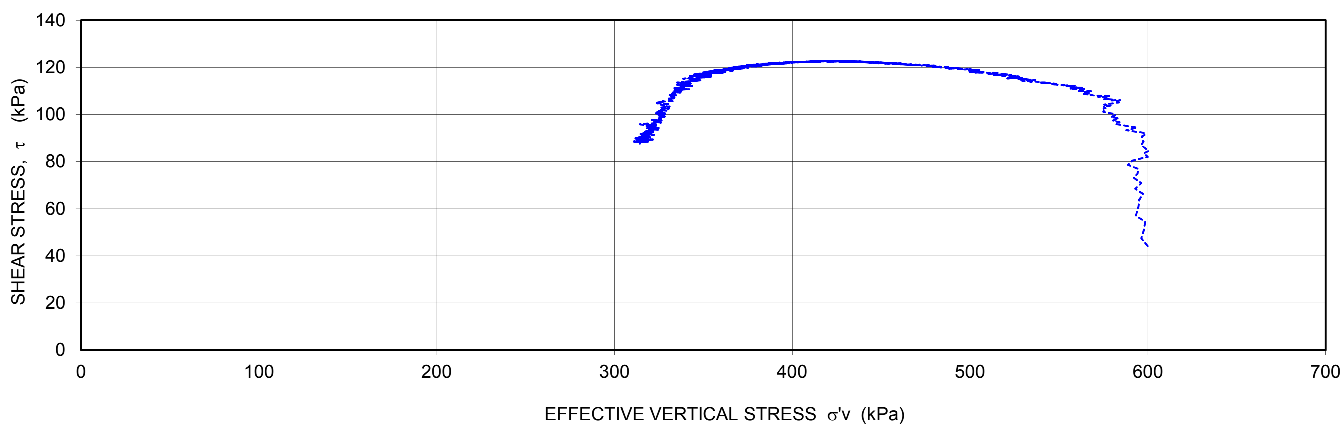
MEG TECHNICAL SERVICES

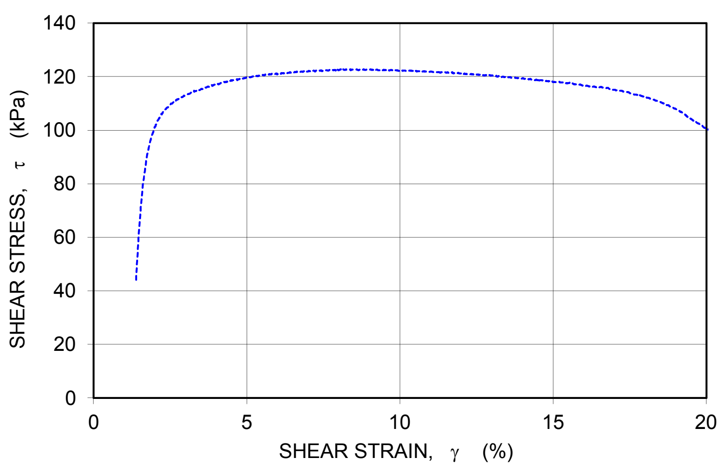
(A Division of MEG Consulting Limited)

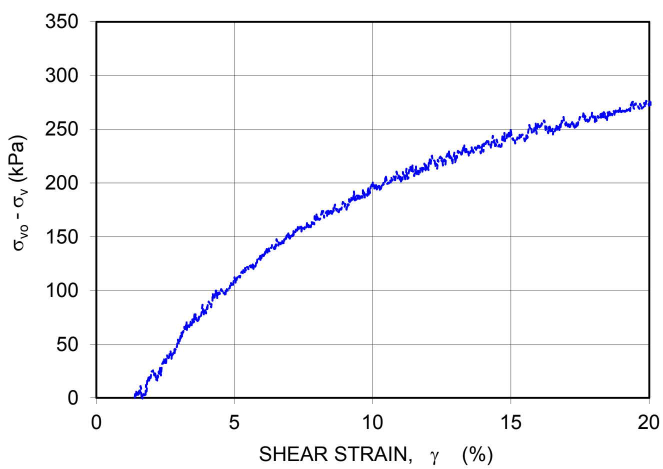
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 18, 2014
Borehole:	MR14-106G	Depth (m):	7.84
Sample No.:	Sa2B - T1	Station:	DSS2

Initial Height (mm):	20.3	**Weight of Specimen (g):**	181.24	**Initial Void Ratio, e_o:**	0.92
Diameter of Ring (mm):	73.0	**Total Unit Weight (kN/m^3):**	20.93	**Final Void Ratio, e_f:**	0.71
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	14.59	**Natural Water Content (%):**	43.5
Final Water Content (%):	35.9	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa2B - T1	7.86	20.9	600	60

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	PS
Date:	November 18, 2014	Date:	November 18, 2014	Date:	November 19, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 18, 2014
Borehole:	MR14-106G	Depth (m):	7.84
Sample No.:	Sa2B - T1	Station:	DSS2

Sample Pictures

Cross section of the sample after the test was completed. Lamination of sample visiblte.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 18, 2014	Date:	November 18, 2014	Date:	November 19, 2014

MEG TECHNICAL SERVICES

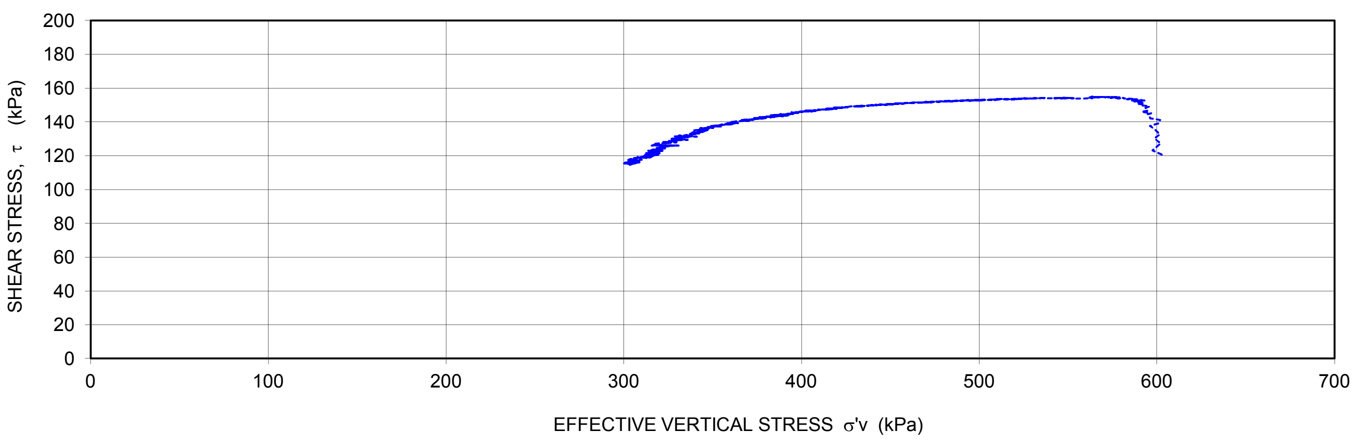
(A Division of MEG Consulting Limited)

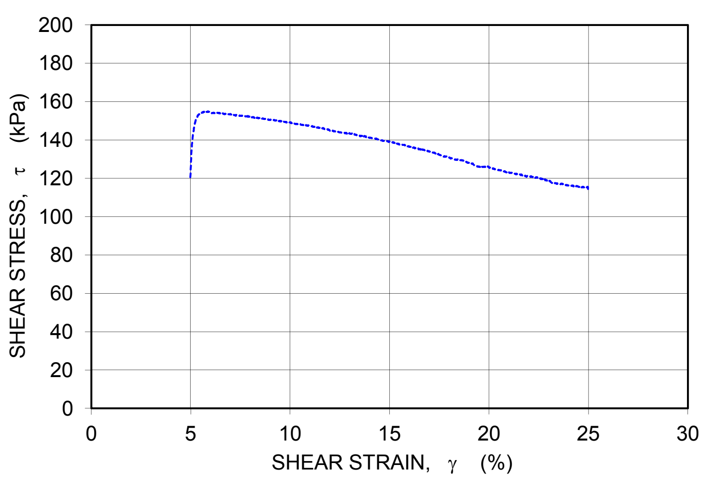
Marine + Earth MEG Geosciences

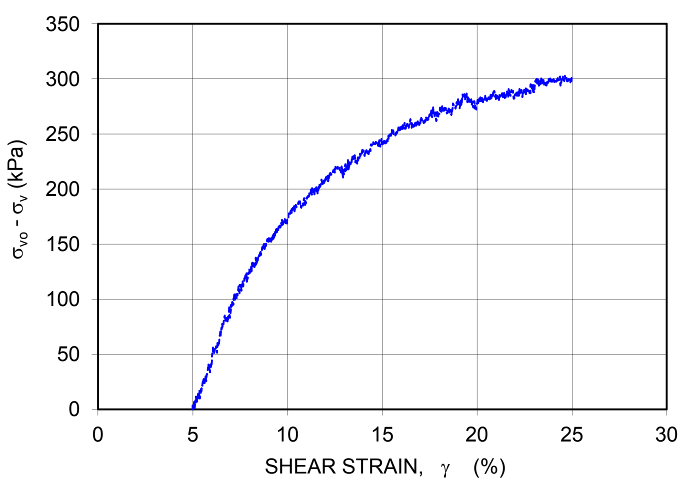
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 27, 2014
Borehole:	MR14-106G	Depth (m):	8.13
Sample No.:	Sa2b - T2	Station:	DSS2

Initial Height (mm):	23.5	**Weight of Specimen (g):**	181.04	**Initial Void Ratio, e_o:**	1.16
Diameter of Ring (mm):	73.4	**Total Unit Weight (kN/m^3):**	17.87	**Final Void Ratio, e_f:**	0.94
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	12.92	**Natural Water Content (%):**	38.3
Final Water Content (%):	28.7	**Initial Degree of Saturation, Sr (%):**	93.8	**Final Degree of Saturation, Sr (%):**	87.5







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa2b - T2	8.16	17.9	600	120

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	PC	Checked By:	PS	Approved By:	JPS
Date:	November 27, 2014	Date:	December 1, 2014	Date:	December 2, 2014

MEG TECHNICAL SERVICES

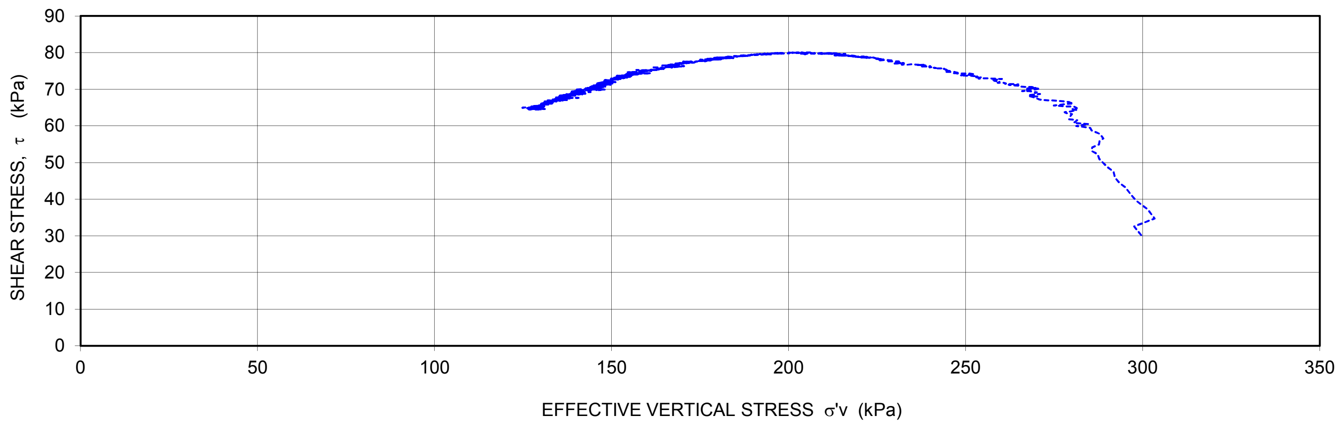
(A Division of MEG Consulting Limited)

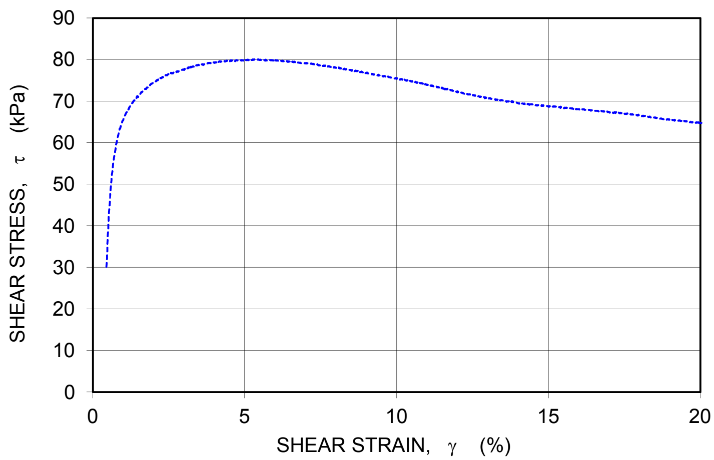
Marine + Earth Geosciences

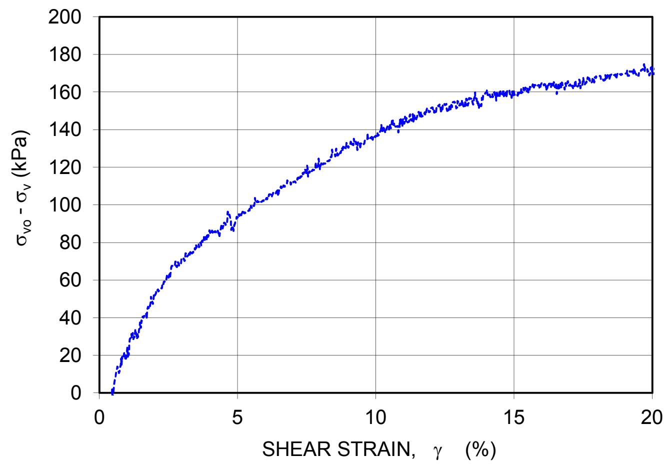
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 4, 2014
Borehole:	MR14-107	Depth (m):	7.14
Sample No.:	Sa 6C	Station:	DSS1

Initial Height (mm):	23.5	**Weight of Specimen (g):**	178.49	**Initial Void Ratio, e_o:**	1.27
Diameter of Ring (mm):	73.2	**Total Unit Weight (kN/m^3):**	17.70	**Final Void Ratio, e_f:**	1.08
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	12.33	**Natural Water Content (%):**	43.5
Final Water Content (%):	38.7	**Initial Degree of Saturation, Sr (%):**	97.8	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 6C	7.20	17.7	300	30

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 4, 2014	Date:	November 4, 2014	Date:	November 5, 2014

MEG TECHNICAL SERVICES
(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 4, 2014
Borehole:	MR14-107	Depth (m):	7.14
Sample No.:	Sa 6C	Station:	DSS1

Sample Pictures

Sample in ring assembly after shear

Cross section of the sample after the test was completed. Lamination of sample visiblte.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 4, 2014	Date:	November 4, 2014	Date:	November 5, 2014

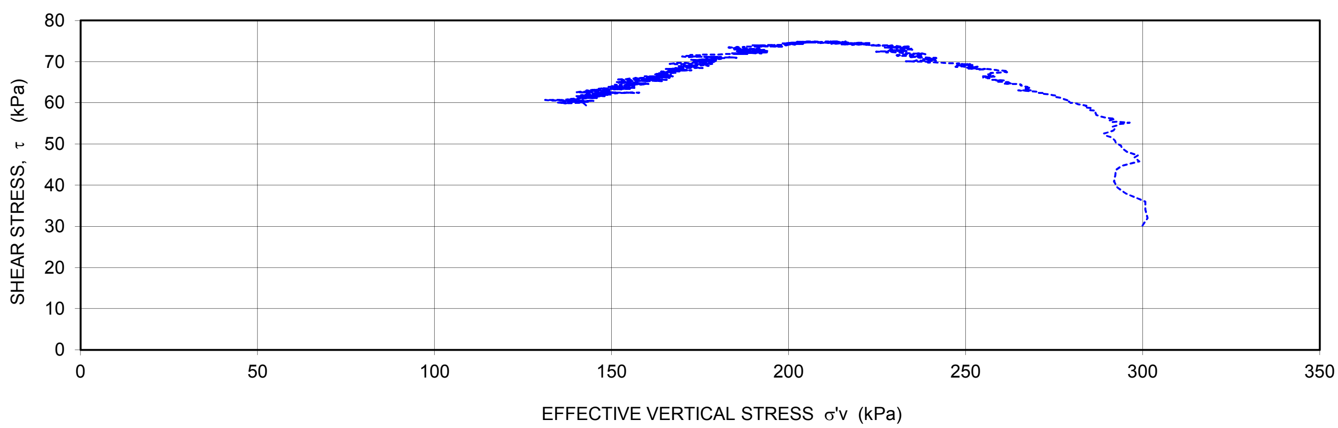
MEG TECHNICAL SERVICES

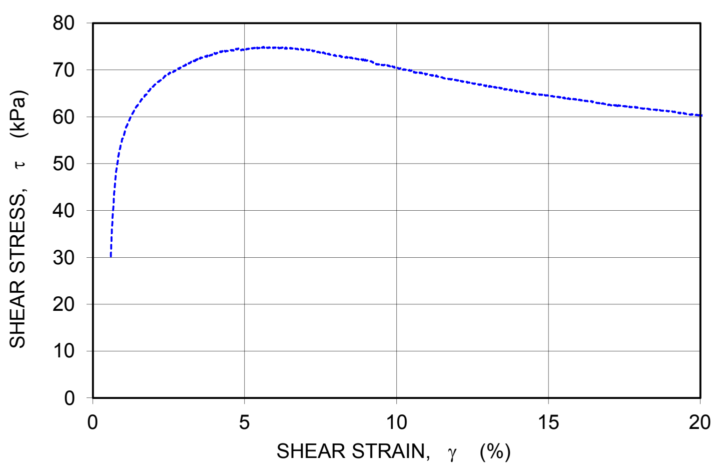
(A Division of MEG Consulting Limited)

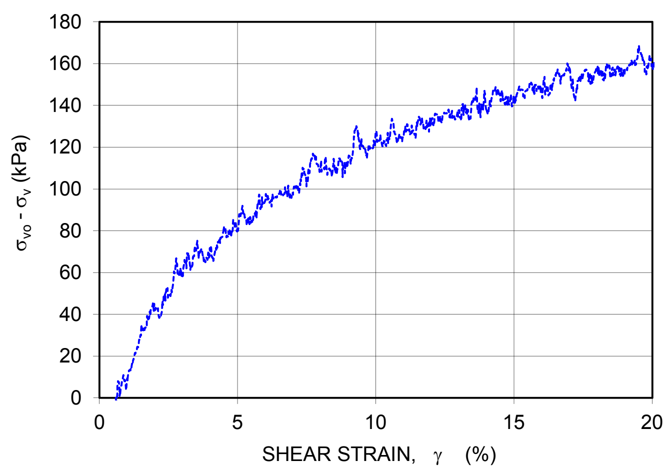
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 7, 2014
Borehole:	MR14-107	Depth (m):	7.17
Sample No.:	Sa 6C - T2	Station:	DSS1

Initial Height (mm):	23.4	**Weight of Specimen (g):**	174.06	**Initial Void Ratio, e_o:**	1.31
Diameter of Ring (mm):	72.9	**Total Unit Weight (kN/m^3):**	17.44	**Final Void Ratio, e_f:**	1.13
Specific Gravity, Gs:	2.89	**Dry Unit Weight (kN/m^3):**	12.23	**Natural Water Content (%):**	42.6
Final Water Content (%):	42.3	**Initial Degree of Saturation, Sr (%):**	93.5	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 6C - T2	7.23	17.4	300	30

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 7, 2014	Date:	November 7, 2014	Date:	November 8, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 7, 2014
Borehole:	MR14-107	Depth (m):	7.17
Sample No.:	Sa 6C - T2	Station:	DSS1

Sample Pictures

Cross section of the sample after the test was completed. Lamination of sample visiblte.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 7, 2014	Date:	November 7, 2014	Date:	November 8, 2014

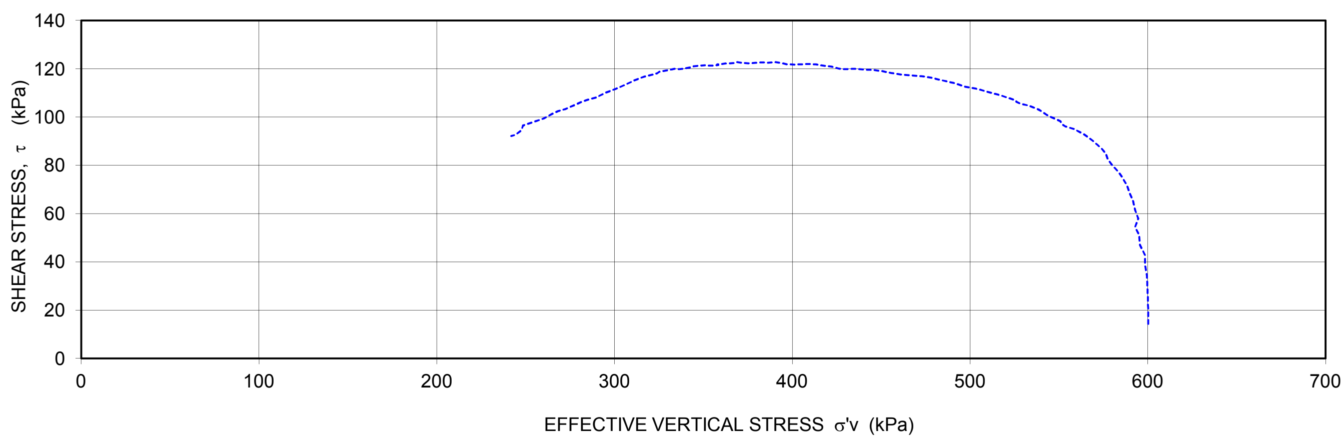
MEG TECHNICAL SERVICES

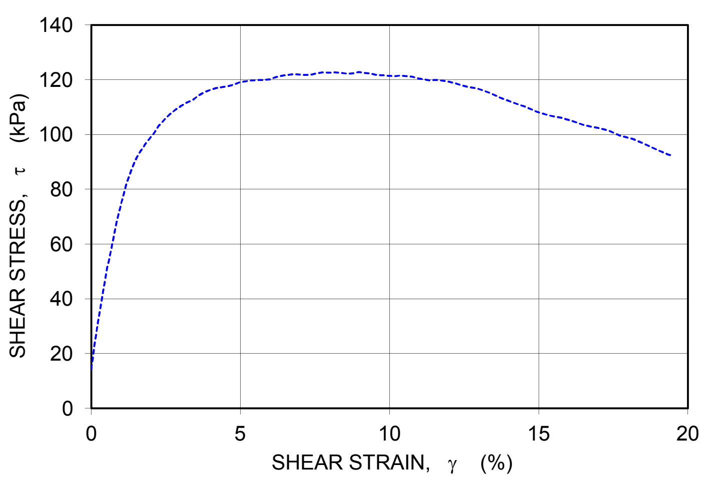
(A Division of MEG Consulting Limited)

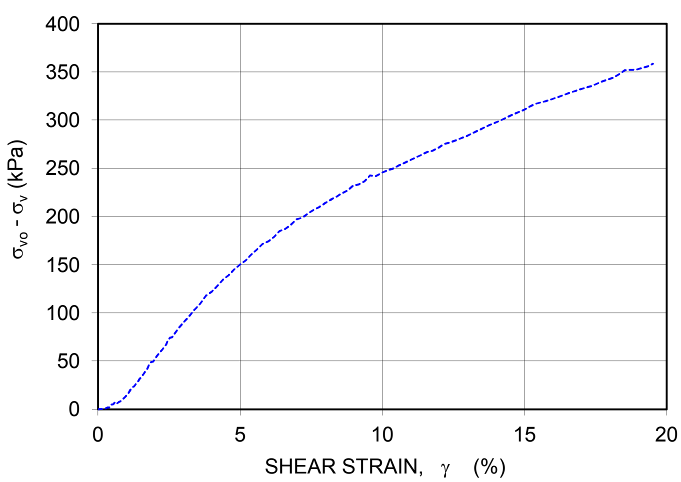
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 10, 2014
Borehole:	MR14-107A	Depth (m):	7.23
Sample No.:	Sa 1A - T1	Station:	DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	154.83	**Initial Void Ratio, e_o:**	1.04
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	19.54	**Final Void Ratio, e_f:**	0.94
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	13.69	**Natural Water Content (%):**	42.7
Final Water Content (%):	35.1	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume			
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)
Sa 1A - T1	7.21	19.5	600

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 10, 2014	Date:	November 10, 2014	Date:	November 11, 2014

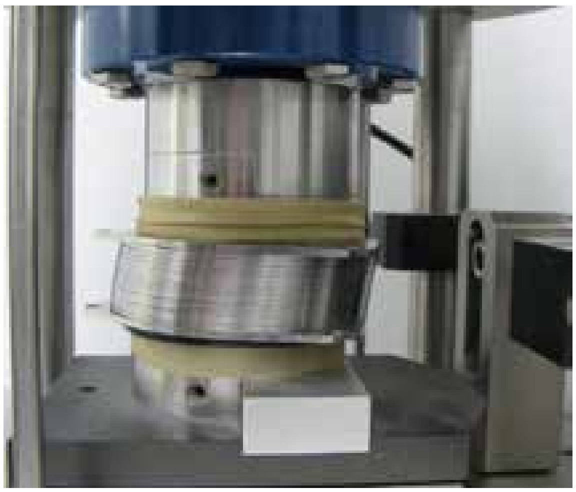
MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 10, 2014
Borehole:	MR14-107A	Depth (m):	7.23
Sample No.:	Sa 1A - T1	Station:	DSS

Sample Pictures



Groove patern on the top surface of the sample

Cross section of the sample after the test was completed

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 10, 2014	Date:	November 10, 2014	Date:	November 11, 2014

MEG TECHNICAL SERVICES

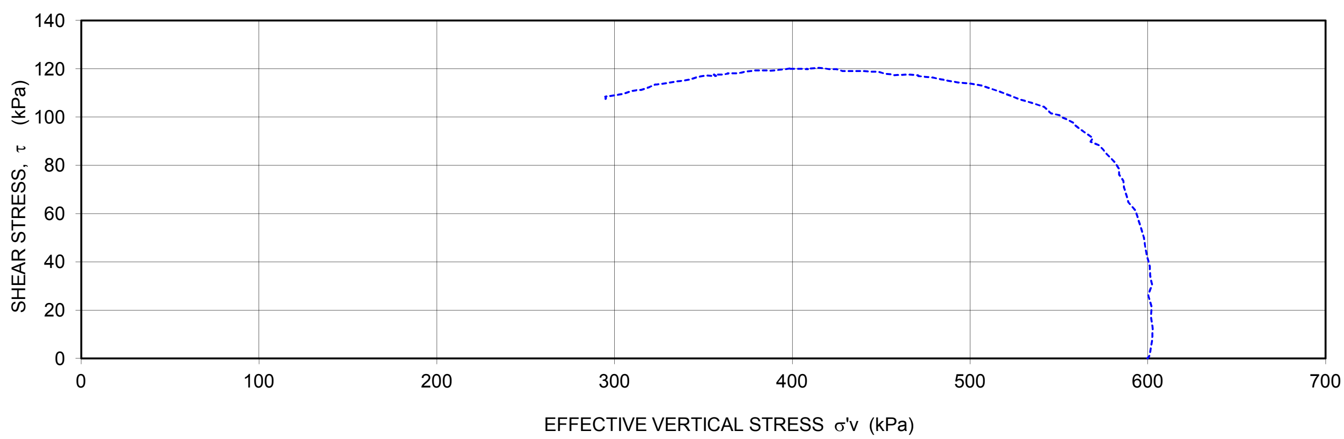
(A Division of MEG Consulting Limited)

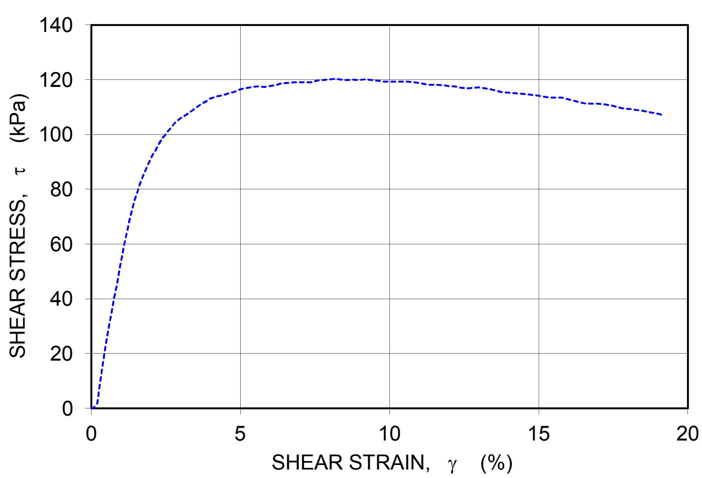
Marine + Earth MEG Geosciences

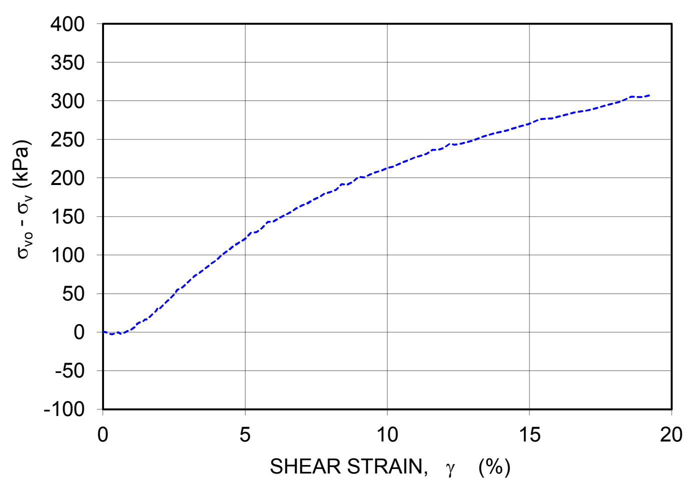
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 20, 2014
Borehole:	MR14-107A	Depth (m):	7.26
Sample No.:	Sa 1A - T2	Station:	DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	156.49	**Initial Void Ratio, e_o:**	1.01
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	19.75	**Final Void Ratio, e_f:**	0.91
Specific Gravity, Gs:	2.85	**Dry Unit Weight (kN/m^3):**	13.90	**Natural Water Content (%):**	42.1
Final Water Content (%):	41.0	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume			
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)
Sa 1A - T2	7.21	19.7	600

Comments: Assumed Gs of 2.85 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 20, 2014	Date:	November 20, 2014	Date:	November 21, 2014

MEG TECHNICAL SERVICES

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DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	November 20, 2014
Borehole:	MR14-107A	Depth (m):	7.26
Sample No.:	Sa 1A - T2	Station:	DSS

Sample Pictures

Cross section of the sample after the test was completed

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	November 20, 2014	Date:	November 20, 2014	Date:	November 21, 2014

MEG TECHNICAL SERVICES

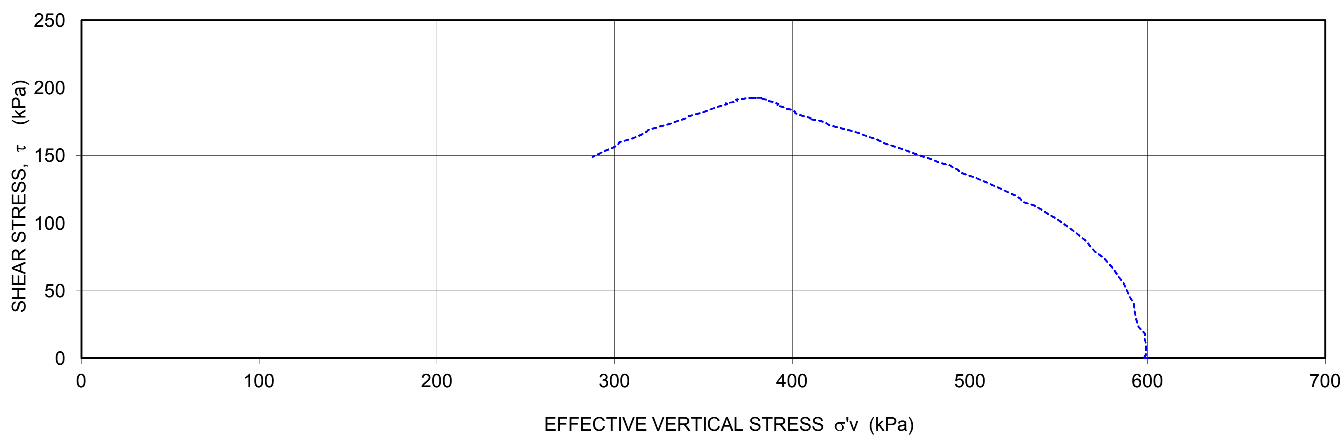
(A Division of MEG Consulting Limited)

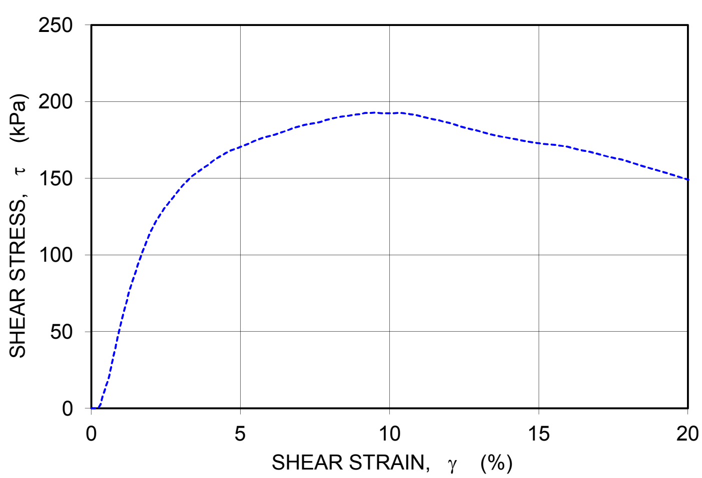
Marine + Earth MEG Geosciences

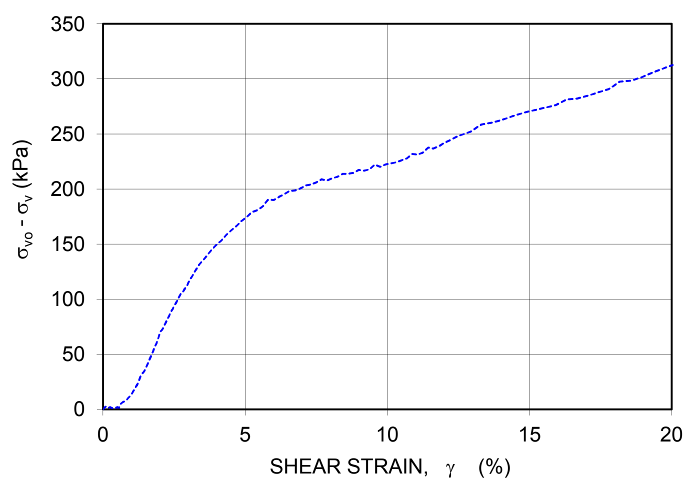
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-107A	Depth (m):	11.96
Sample No.:	Sa 7	Station:	DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	164.61	**Initial Void Ratio, e_o:**	0.59
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	20.77	**Final Void Ratio, e_f:**	0.51
Specific Gravity, Gs:	2.75	**Dry Unit Weight (kN/m^3):**	16.99	**Natural Water Content (%):**	22.2
Final Water Content (%):	21.8	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 6B	11.84	20.8	300	30

Comments: Assumed Gs of 2.75 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	November 2, 2014

MEG TECHNICAL SERVICES

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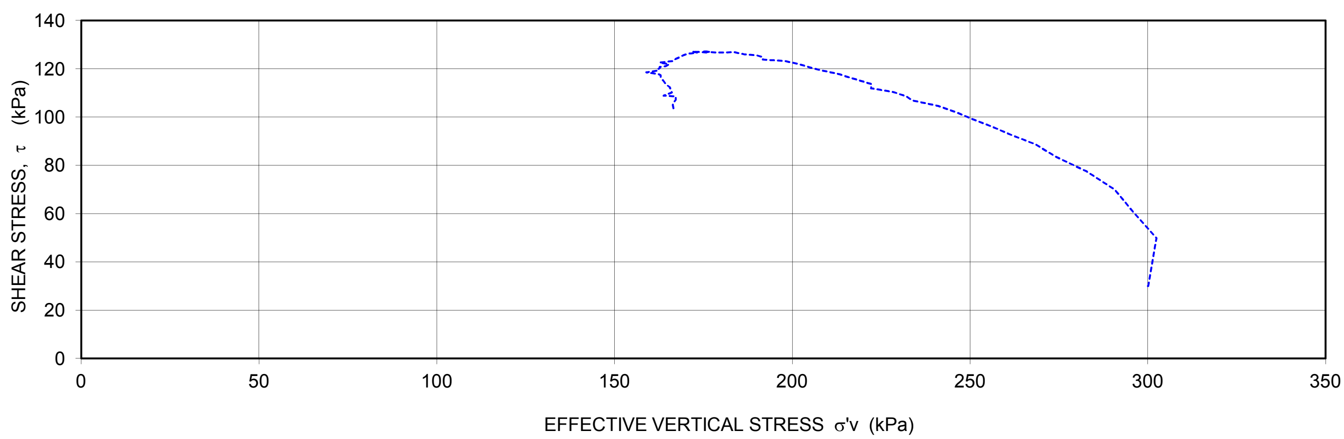
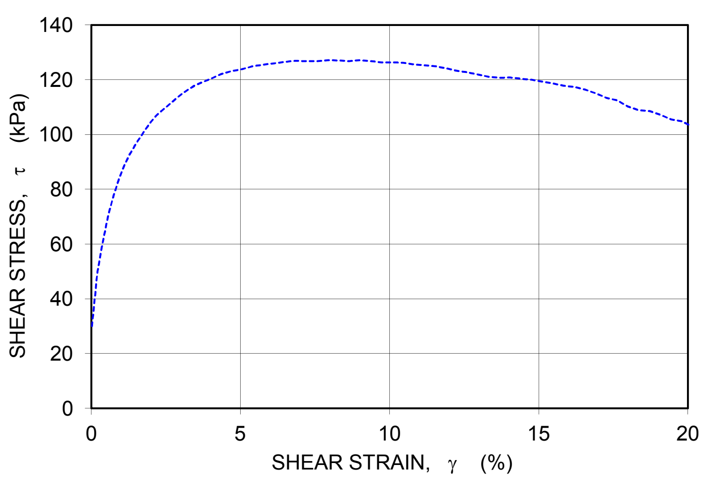
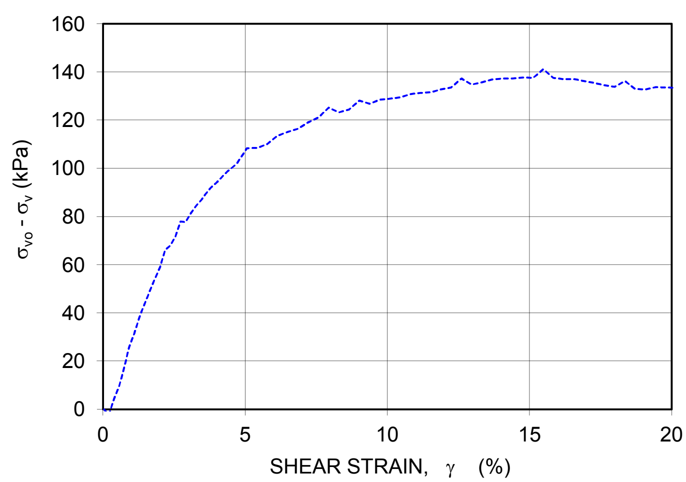
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-109	Depth (m):	12.42
Sample No.:	Sa 6B	Station:	DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	164.61	**Initial Void Ratio, e_o:**	0.59
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	20.77	**Final Void Ratio, e_f:**	0.51
Specific Gravity, Gs:	2.75	**Dry Unit Weight (kN/m^3):**	16.99	**Natural Water Content (%):**	22.2
Final Water Content (%):	21.8	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 6B	12.46	20.8	300	30

Comments: Slip was observed at the sample-porous stone interface (see pictures)
Assumed Gs of 2.75 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	November 3, 2014

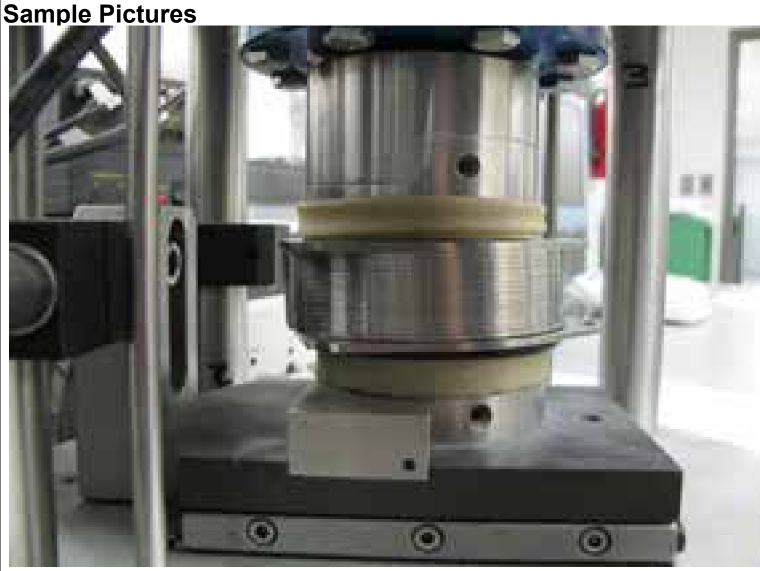
MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-109	Depth (m):	12.42
Sample No.:	Sa 6B	Station:	DSS

Sample Pictures



Partial slip along the sample-porous stone interface. Porous stone is level with the bottom ring

Groove patern on the top surface of the sample

Cross section of the sample after the test was completed. possible lamination present.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	November 3, 2014

MEG TECHNICAL SERVICES

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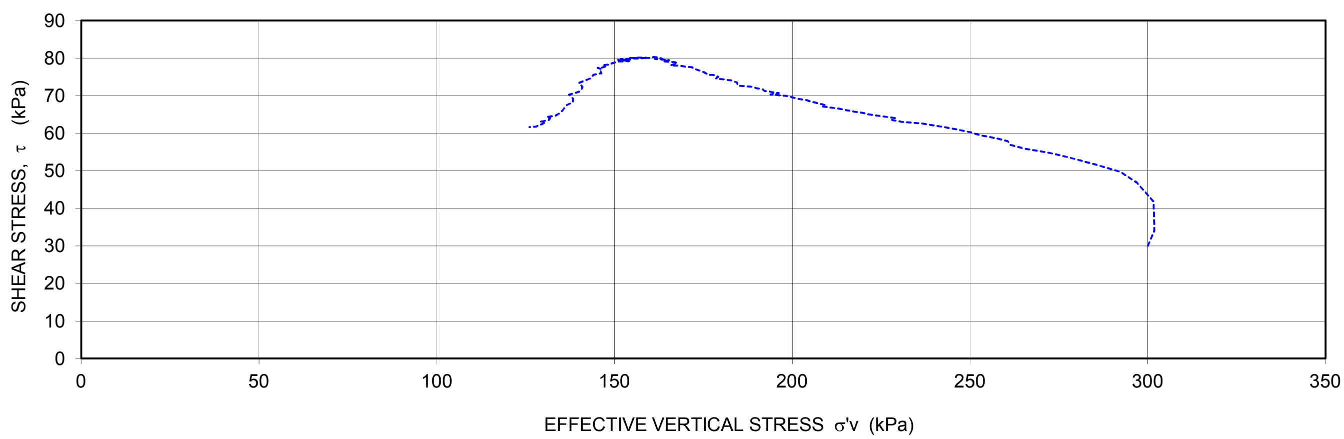
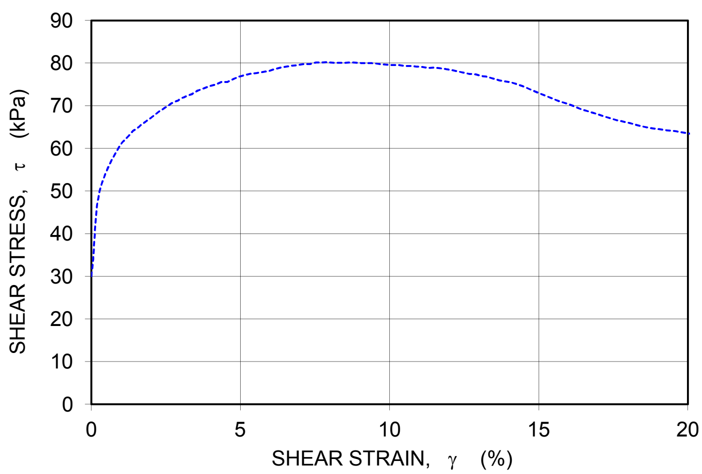
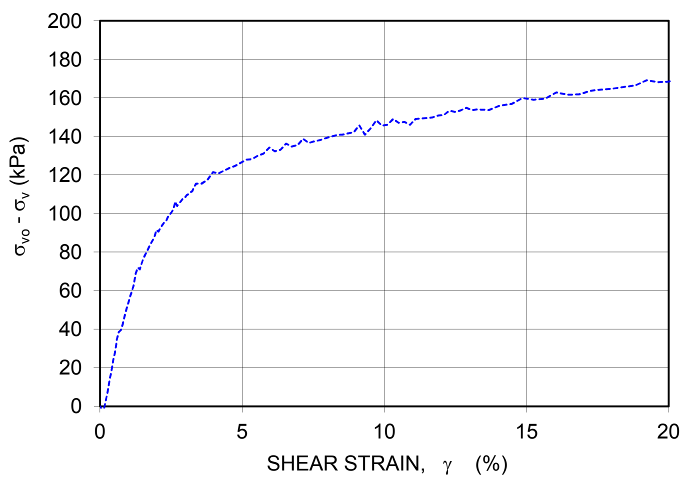
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-110	Depth (m):	12.47
Sample No.:	Sa 6C	Station:	DSS

Initial Height (mm):	22.4	**Weight of Specimen (g):**	143.97	**Initial Void Ratio, e_o:**	0.80
Diameter of Ring (mm):	66.5	**Total Unit Weight (kN/m^3):**	18.17	**Final Void Ratio, e_f:**	0.71
Specific Gravity, Gs:	2.75	**Dry Unit Weight (kN/m^3):**	14.98	**Natural Water Content (%):**	21.2
Final Water Content (%):	22.4	**Initial Degree of Saturation, Sr (%):**	73.0	**Final Degree of Saturation, Sr (%):**	86.9







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 6C	12.45	18.2	300	30

Comments: Gs of 2.75 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	November 2, 2014

MEG TECHNICAL SERVICES

(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-110	Depth (m):	12.47
Sample No.:	Sa 6C	Station:	DSS

Sample Pictures

Groove patern on the top surface of the sample

Cross section of the sample after the test was completed.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	November 2, 2014

MEG TECHNICAL SERVICES

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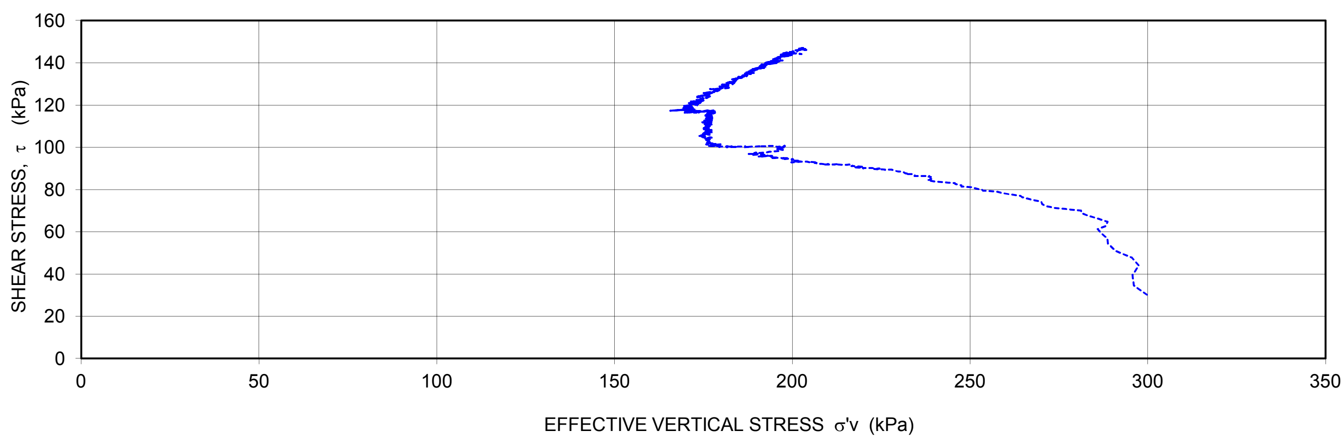
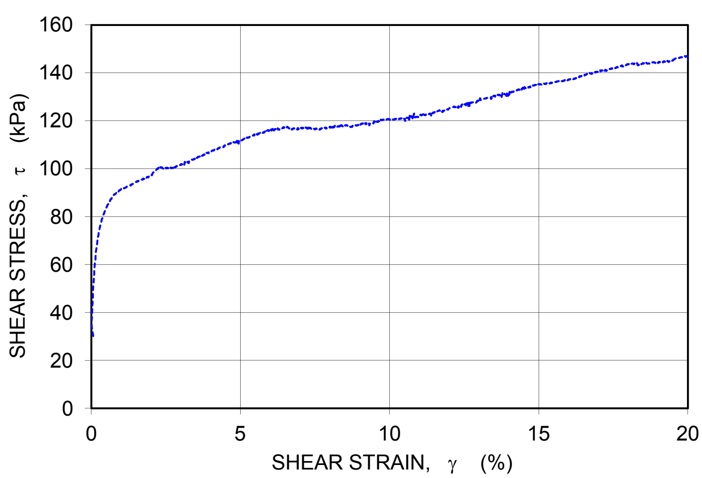
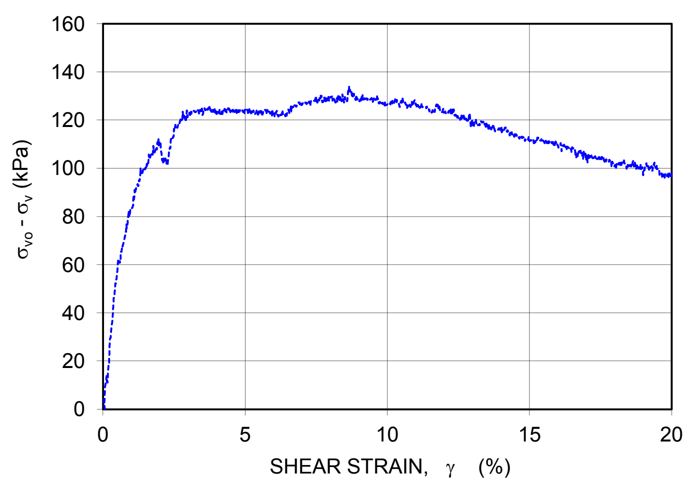
DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-113	Depth (m):	6.57
Sample No.:	Sa 4B	Station:	DSS1

Initial Height (mm):	23.5	**Weight of Specimen (g):**	227.90	**Initial Void Ratio, e_o:**	0.35
Diameter of Ring (mm):	73.4	**Total Unit Weight (kN/m^3):**	22.53	**Final Void Ratio, e_f:**	0.31
Specific Gravity, Gs:	2.75	**Dry Unit Weight (kN/m^3):**	20.04	**Natural Water Content (%):**	12.5
Final Water Content (%):	12.2	**Initial Degree of Saturation, Sr (%):**	>100	**Final Degree of Saturation, Sr (%):**	>100







Type of Test: Constant Volume				
Sample No.	Depth (m)	Total Unit Weight (kN/m^3)	Effective Vertical Stress, σ'v (kPa)	Static Bias (kPa)
Sa 4B	6.57	22.5	300	30

Comments: Slip was observed at the sample-porous stone interface (see pictures)
Assumed Gs of 2.75 as instructed by Thurber

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	October 31, 2014

MEG TECHNICAL SERVICES

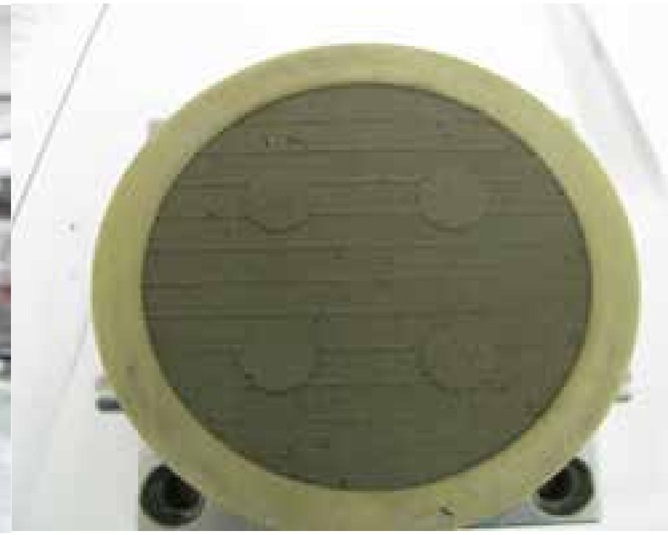
(A Division of MEG Consulting Limited)

DIRECT SIMPLE SHEAR TEST (ASTM D 6528)

Project:	Mount Polley Independent Expert Engineering Investigation and Review Panel	Project No.:	14-MTS-021
Location:	Mount Polley Tailings Storage Facility, BC	Date:	October 31, 2014
Borehole:	MR14-113	Depth (m):	6.57
Sample No.:	Sa 4B	Station:	DSS1

Sample Pictures

Partial slip along the sample-porous stone interface. Porous stone is level with the third ring from the bottom.



Groove patern on the top surface of the sample

Cross section of the sample after the test was completed. Fine gravel particle present.

Groove patern on the bottom surface of the sample. Grooves show tearing from slip along the interface. Missing sample from goove patern was stuck to the porous stone.

Prepared By:	MF	Checked By:	PS	Approved By:	JPS
Date:	October 31, 2014	Date:	October 31, 2014	Date:	October 31, 2014