January 29, 2009
AMEC Project No. 9-419-000740

Brown & Caldwell
3264 Goni Road, Suite 153
Carson City, Nevada 89706

RECEIVED
FEB - 1 2009
BROWN AND CALDWELL
CARSON CITY

Attention: Mr. Brad Hart, P.E.

Re: Laboratory Test Results

We are sending:

√ As requested √ For your use ___For comment ___Under separate cover

One copy of:

Laboratory Test Results:

- Lab No. 1208 A - E, Hydrometer Particle Size Distribution Reports (ASTM D422);
- Lab No. 1208 G, I, J, K, L, Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (ASTM D5084).

If you have questions, please do not hesitate to call me at (775) 331-2375.

Respectfully submitted,
AMEC Earth & Environmental, Inc.

Reviewed By:

Brenda Hermes

Michael Hawe, S.E.T.
Laboratory Supervisor

Brenda Hermes, E.I.
Project Manager

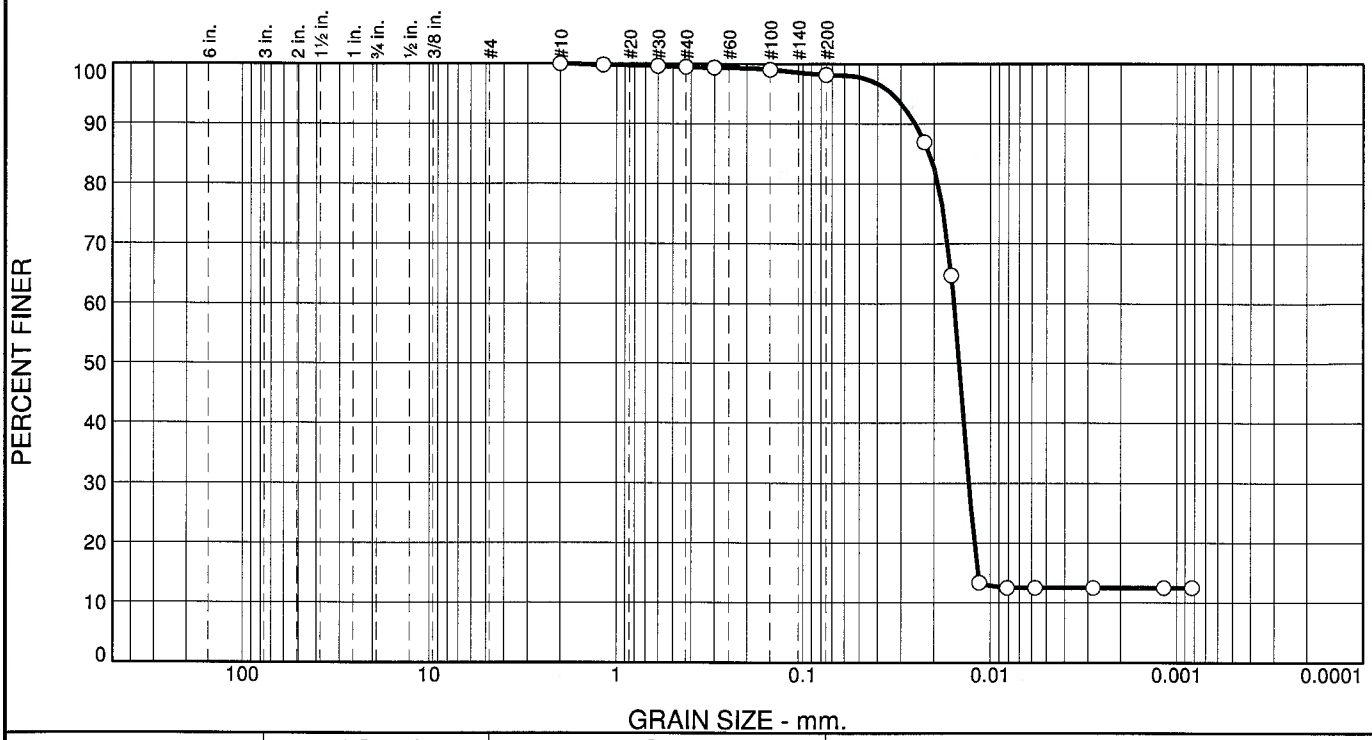
MK/BH/ng

Enclosures

J:\4-LAB\09419\9419000740_Brown & Caldwell\9-740_trans_1.doc

AMEC Earth & Environmental, Inc.
780 Vista Boulevard, Suite 100
Sparks, Nevada
USA 89434-6656
Tel + 1 (775) 331-2375
Fax + 1 (775) 331-4153
www.amec.com

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	1.3	85.7	12.5

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#16	99.8		
#30	99.6		
#40	99.5		
#50	99.4		
#100	99.1		
#200	98.2		
0.0225 mm.	86.9		
0.0161 mm.	64.7		
0.0114 mm.	13.4		
0.0081 mm.	12.5		
0.0057 mm.	12.5		
0.0028 mm.	12.5		
0.0012 mm.	12.5		
0.0008 mm.	12.5		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.0252 D_{85}= 0.0212 D_{60}= 0.0156
D_{50}= 0.0147 D_{30}= 0.0130 D_{15}= 0.0116
D_{10}= C_u= C_c=

Remarks

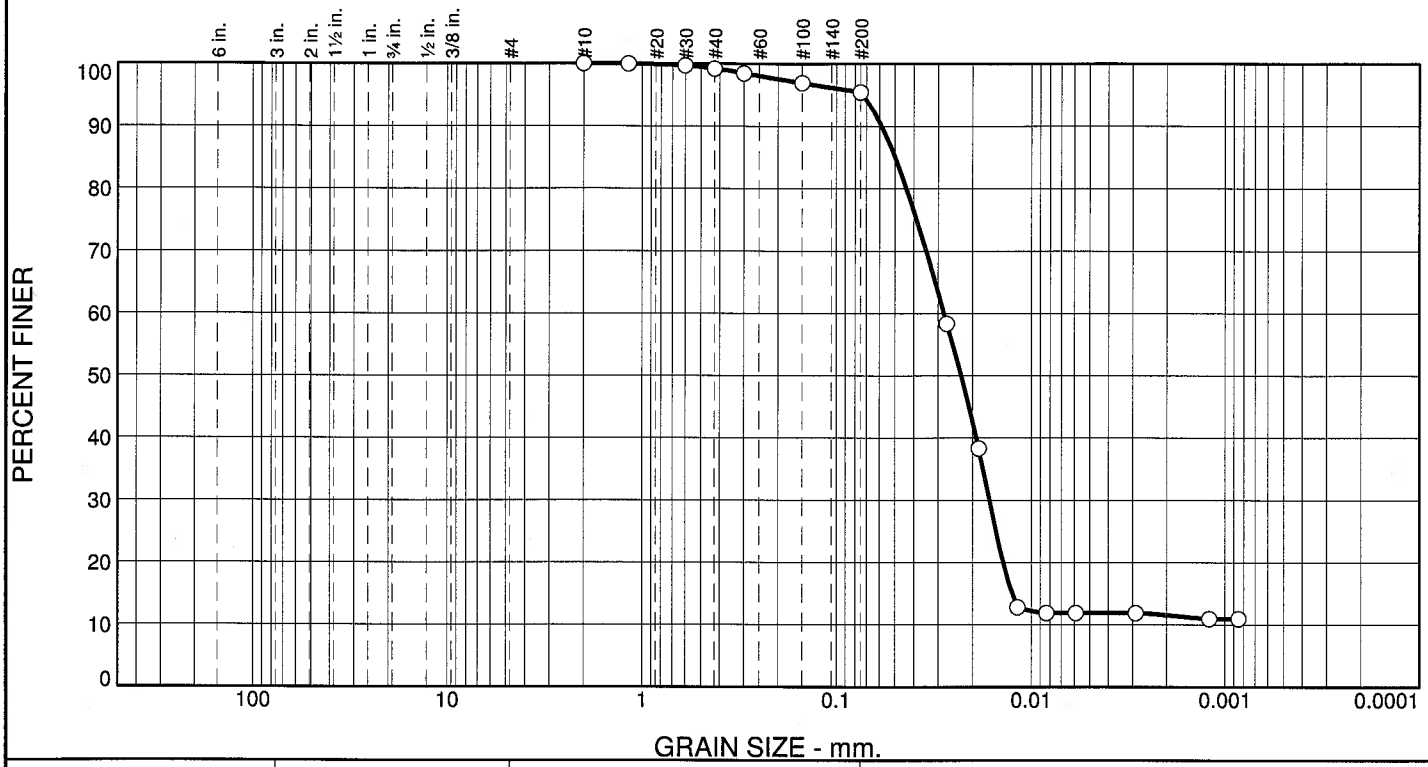
Date Received: 1-14-09 **Date Tested:** 1-14-09
Tested By: DS
Checked By: Mike Hawe
Title: Laboratory Supervisor

Location: OU4-UEP-61-SED
Sample Number: 1208A
Date Sampled: 1-13-09

AMEC Earth & Environmental Reno, NV

Client: Brown and Caldwell Consultants
Project: Yerington Mine OU 4 - Phase 1 (YER 2051)
Project No: 9419000740 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.8	3.8	83.5	11.9

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#16	100.0		
#30	99.7		
#40	99.2		
#50	98.5		
#100	96.9		
#200	95.4		
0.0271 mm.	58.4		
0.0186 mm.	38.3		
0.0117 mm.	12.8		
0.0083 mm.	11.9		
0.0059 mm.	11.9		
0.0029 mm.	11.9		
0.0012 mm.	10.9		
0.0009 mm.	10.9		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.0584 D_{85}= 0.0499 D_{60}= 0.0280
D_{50}= 0.0229 D_{30}= 0.0164 D_{15}= 0.0126
D_{10}= C_u= C_c=

Remarks

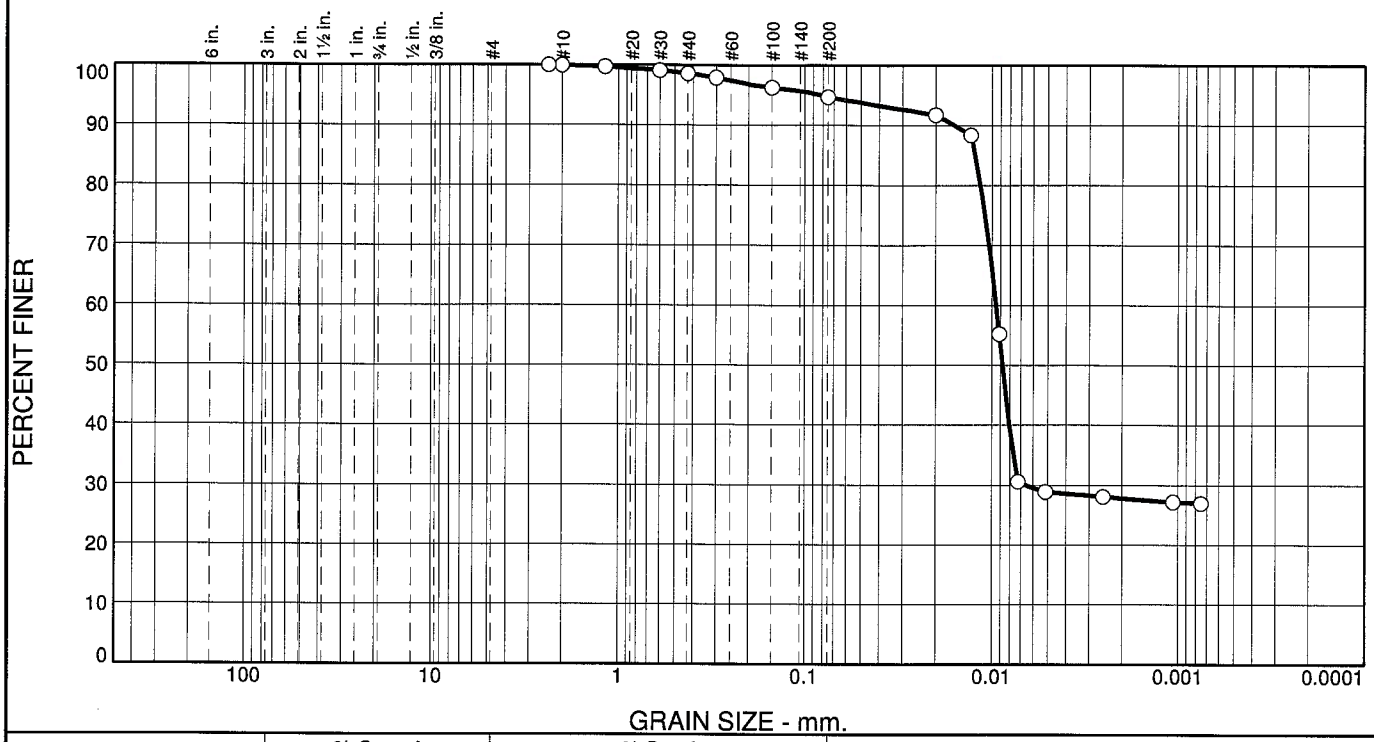
Date Received: 1-14-09 **Date Tested:** 1-14-09
Tested By: DS
Checked By: Michael Hawe
Title: Laboratory Supervisor

Location: OU4-UEP-62-SED
Sample Number: 1208B
Date Sampled: 1-13-09

AMEC Earth & Environmental Reno, NV

Client: Brown and Caldwell Consultants
Project: Yerington Mine OU 4 - Phase 1 (YER 2051)
Project No: 9419000740 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	1.3	3.9	65.9	28.8

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#8	100.0		
#10	99.9		
#16	99.7		
#30	99.0		
#40	98.6		
#50	97.9		
#100	96.3		
#200	94.7		
0.0200 mm.	91.7		
0.0130 mm.	88.3		
0.0091 mm.	55.2		
0.0072 mm.	30.6		
0.0051 mm.	28.9		
0.0025 mm.	28.0		
0.0011 mm.	27.2		
0.0008 mm.	26.9		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.0158 D_{85}= 0.0123 D_{60}= 0.0095
D_{50}= 0.0087 D_{30}= 0.0065 D_{15}=
D_{10}= C_u= C_c=

Remarks

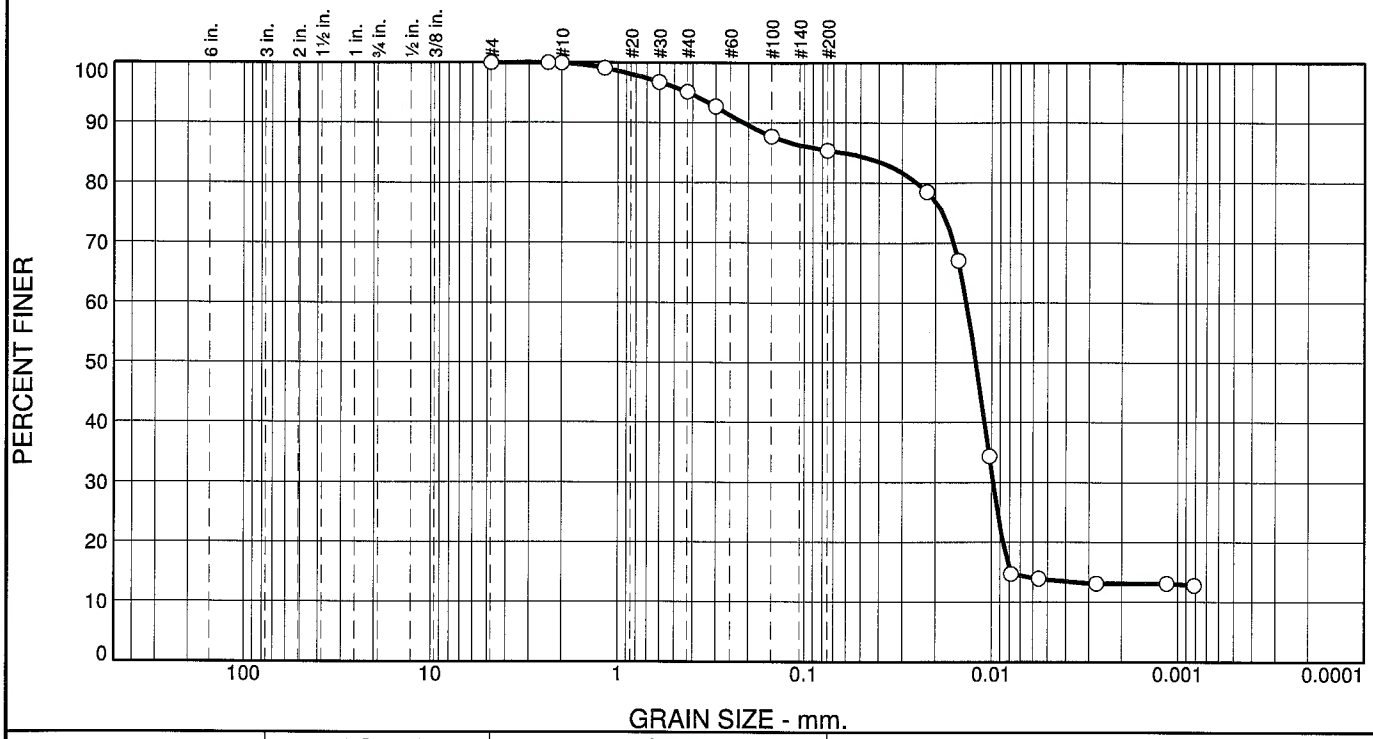
Date Received: 1-14-09 **Date Tested:** 1-14-09
Tested By: DS
Checked By: Michael Hawe
Title: Laboratory Supervisor

Location: OU4-LEP-63-SED
Sample Number: 1208C
Date Sampled: 1-13-09

AMEC Earth & Environmental Reno, NV

Client: Brown and Caldwell Consultants
Project: Yerington Mine OU 4 - Phase 1 (YER 2051)
Project No: 9419000740 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	4.8	9.7	71.7	13.7

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#8	100.0		
#10	99.9		
#16	99.1		
#30	96.8		
#40	95.1		
#50	92.7		
#100	87.8		
#200	85.4		
0.0222 mm.	78.5		
0.0151 mm.	67.1		
0.0103 mm.	34.3		
0.0078 mm.	14.7		
0.0056 mm.	13.9		
0.0027 mm.	13.1		
0.0011 mm.	13.1		
0.0008 mm.	12.8		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.2106 D_{85}= 0.0631 D_{60}= 0.0136
D_{50}= 0.0121 D_{30}= 0.0098 D_{15}= 0.0079
D_{10}= C_u= C_c=

Remarks

Date Received: 1-14-09 **Date Tested:** 1-14-09

Tested By: DS

Checked By: Michael Hawe

Title: Laboratory Supervisor

Location: OU4-LEP-64-SED
Sample Number: 1208D

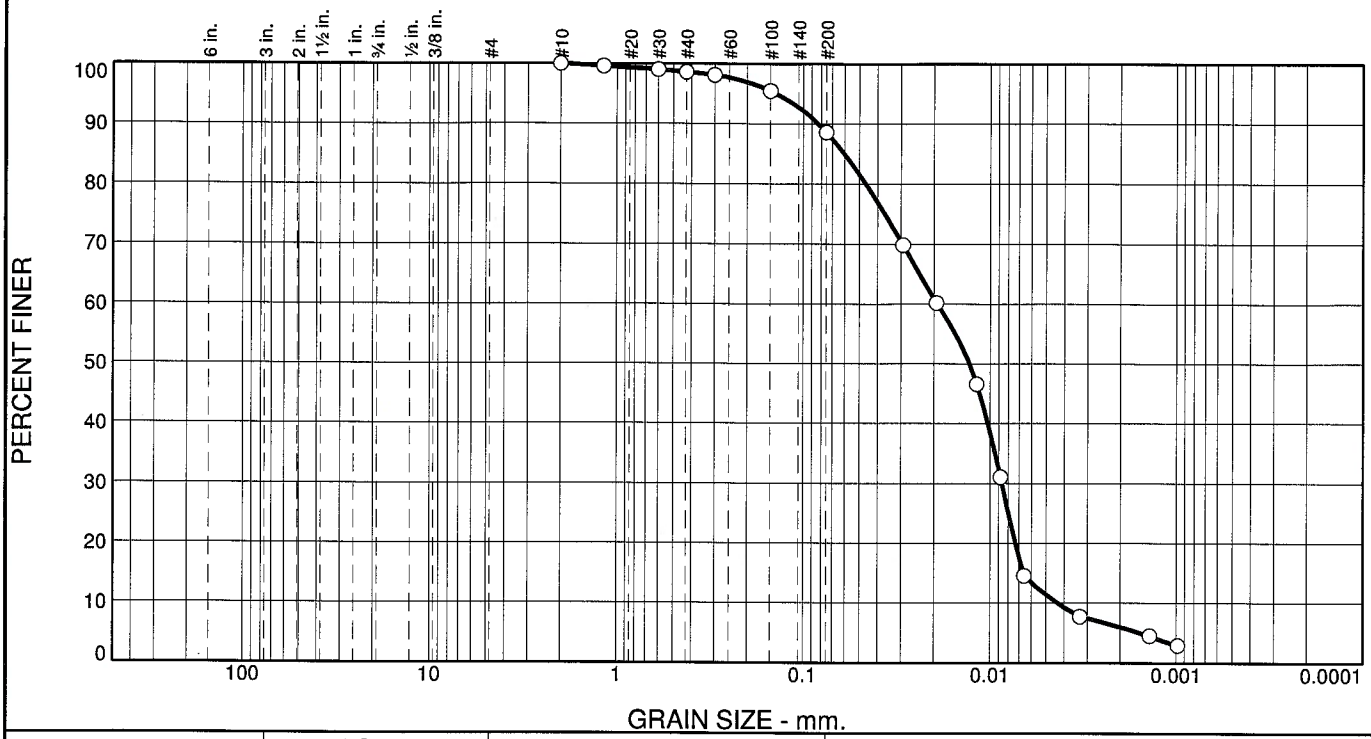
Date Sampled: 1-13-09

AMEC Earth & Environmental Reno, NV

Client: Brown and Caldwell Consultants
Project: Yerington Mine OU 4 - Phase 1 (YER 2051)

Project No: 9419000740 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.4	10.0	77.1	11.5

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#10	100.0		
#16	99.6		
#30	99.0		
#40	98.6		
#50	98.1		
#100	95.5		
#200	88.6		
0.0293 mm.	69.8		
0.0193 mm.	60.1		
0.0118 mm.	46.6		
0.0088 mm.	31.0		
0.0066 mm.	14.5		
0.0033 mm.	7.8		
0.0014 mm.	4.5		
0.0010 mm.	2.9		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.0832 D_{85}= 0.0600 D_{60}= 0.0192
D_{50}= 0.0129 D_{30}= 0.0086 D_{15}= 0.0066
D_{10}= 0.0043 C_u= 4.45 C_c= 0.90

Remarks

Date Received: 1-14-09 **Date Tested:** 1=-14-09
Tested By: DS
Checked By: Michael Hawe
Title: Laboratory Supervisor

Location: OU4-FEP-65-SED
Sample Number: 1208E
Date Sampled: 1-13-09

AMEC Earth & Environmental Reno, NV

Client: Brown and Caldwell Consultants
Project: Yerington Mine OU 4 - Phase 1 (YER 2051)
Project No: 9419000740 **Figure**

PROJECT:	Yerington Mine OU 4 - Phase 1 (YER 2051)	**JOB NO:**	9419000740
CLIENT:	Brown and Caldwell	**LAB NO:**	1208G
MATERIAL:	---	**DATE SAMPLED:**	1/16/2009
SAMPLE SOURCE:	OU4-UEP-61-SED	**SAMPLED BY:**	Client

Measurement of Hydraulic Conductivity of Saturated Porous Materials
Using a Flexible Wall Permeameter (ASTM D5084)

SAMPLE PREPARATION: Undisturbed sample extruded into latex membrane and saturated to 95 percent minimum.
METHOD OF COMPACTION: Not Applicable - In-Situ
TESTING METHOD: Method F: Constant Volume Falling Head (by Mercury) Rising Tailwater

FIELD MOISTURE (%):	22.2	LAB MOISTURE (%):	N/A
INITIAL DIAMETER (cm):	6.15	FINAL DIAMETER** (cm):	6.08
INITIAL LENGTH (cm):	5.46	FINAL LENGTH** (cm):	5.08
INITIAL MOISTURE CONTENT (%):	16.4	FINAL MOISTURE CONTENT (%):	44.9

CONSOLIDATED? (Y/N):	Y	EFFECTIVE PRESSURE (psi):	5
CELL PRESSURE (psi):	60		
BACKPRESSURE (psi):	55		

INITIAL DRY BULK DENSITY (lb/ft^3):	65.8
% COMPACTION:	In-Situ
FINAL DRY BULK DENSITY (lb/ft^3):	72.4

FINAL B PARAMETER READING:	0.98	FINAL BACKPRESSURE (psi):	55

AVERAGE K_{sat}* (cm/s):	**2.83E-06**	**AVERAGE K_{sat}* (ft/day):**	**8.03E-03**

MAXIMUM GRADIENT USED:	29.64
MINIMUM GRADIENT USED:	18.33

*Corrected to 20 °C
**All final sample dimensions are subject to sample deformation caused by exsolution of air in pore water.

PROJECT:	Yerington Mine OU 4 - Phase 1 (YER 2051)	**JOB NO:**	9419000740
CLIENT:	Brown and Caldwell	**LAB NO:**	1208I
MATERIAL:	---	**DATE SAMPLED:**	1/16/2009
SAMPLE SOURCE:	OU4-UEP-62-SED	**SAMPLED BY:**	Client

Measurement of Hydraulic Conductivity of Saturated Porous Materials
Using a Flexible Wall Permeameter (ASTM D5084)

SAMPLE PREPARATION: Undisturbed sample extruded into latex membrane and saturated to 95 percent minimum.
METHOD OF COMPACTION: Not Applicable - In-Situ
TESTING METHOD: Method F: Constant Volume Falling Head (by Mercury) Rising Tailwater

FIELD MOISTURE (%):	55.7	LAB MOISTURE (%):	N/A
INITIAL DIAMETER (cm):	6.13	FINAL DIAMETER** (cm):	6.10
INITIAL LENGTH (cm):	9.93	FINAL LENGTH** (cm):	9.99
INITIAL MOISTURE CONTENT (%):	59.3	FINAL MOISTURE CONTENT (%):	64.1

CONSOLIDATED? (Y/N):	Y	EFFECTIVE PRESSURE (psi):	5
CELL PRESSURE (psi):	70		
BACKPRESSURE (psi):	65		

INITIAL DRY BULK DENSITY (lb/ft^3):	62.0
% COMPACTION:	In-Situ
FINAL DRY BULK DENSITY (lb/ft^3):	62.4

FINAL B PARAMETER READING:	0.96	FINAL BACKPRESSURE (psi):	65

AVERAGE K_{sat}* (cm/s):	**7.55E-06**	**AVERAGE K_{sat}* (ft/day):**	**2.14E-02**

MAXIMUM GRADIENT USED:	17.08
MINIMUM GRADIENT USED:	4.04

*Corrected to 20 °C
**All final sample dimensions are subject to sample deformation caused by exsolution of air in pore water.

PROJECT:	Yerington Mine OU 4 - Phase 1 (YER 2051)	**JOB NO:**	9419000740
CLIENT:	Brown and Caldwell	**LAB NO:**	1208J
MATERIAL:	---	**DATE SAMPLED:**	1/16/2009
SAMPLE SOURCE:	OU4-LEP-63-SED	**SAMPLED BY:**	Client

Measurement of Hydraulic Conductivity of Saturated Porous Materials
Using a Flexible Wall Permeameter (ASTM D5084)

SAMPLE PREPARATION: Undisturbed sample extruded into latex membrane and saturated to 95 percent minimum.
METHOD OF COMPACTION: Not Applicable - In-Situ
TESTING METHOD: Method F: Constant Volume Falling Head (by Mercury) Rising Tailwater

FIELD MOISTURE (%):	36	LAB MOISTURE (%):	N/A
INITIAL DIAMETER (cm):	6.12	FINAL DIAMETER** (cm):	6.09
INITIAL LENGTH (cm):	8.40	FINAL LENGTH** (cm):	8.25
INITIAL MOISTURE CONTENT (%):	61.1	FINAL MOISTURE CONTENT (%):	61.5

CONSOLIDATED? (Y/N):	Y	EFFECTIVE PRESSURE (psi):	5
CELL PRESSURE (psi):	65		
BACKPRESSURE (psi):	60		

INITIAL DRY BULK DENSITY (lb/ft^3):	63.5
% COMPACTION:	In-Situ
FINAL DRY BULK DENSITY (lb/ft^3):	65.2

FINAL B PARAMETER READING:	0.96	FINAL BACKPRESSURE (psi):	60

AVERAGE K_{sat}* (cm/s):	**6.52E-07**	**AVERAGE K_{sat}* (ft/day):**	**1.85E-03**

MAXIMUM GRADIENT USED:	20.15
MINIMUM GRADIENT USED:	4.76

*Corrected to 20 °C
**All final sample dimensions are subject to sample deformation caused by exsolution of air in pore water.

PROJECT:	Yerington Mine Oil 4 - Phase 1 (YER 2051)	**JOB NO:**	9419000740
CLIENT:	Brown and Caldwell	**LAB NO:**	1208K
MATERIAL:	---	**DATE SAMPLED:**	1/16/2009
SAMPLE SOURCE:	OU4-LEP-64-SED	**SAMPLED BY:**	Client

Measurement of Hydraulic Conductivity of Saturated Porous Materials
Using a Flexible Wall Permeameter (ASTM D5084)

SAMPLE PREPARATION: Undisturbed sample extruded into latex membrane and saturated to 95 percent minimum.
METHOD OF COMPACTION: Not Applicable - In-Situ
TESTING METHOD: Method F: Constant Volume Falling Head (by Mercury) Rising Tailwater

FIELD MOISTURE (%):	39.3	LAB MOISTURE (%):	N/A
INITIAL DIAMETER (cm):	6.15	FINAL DIAMETER** (cm):	6.00
INITIAL LENGTH (cm):	6.77	FINAL LENGTH** (cm):	6.59
INITIAL MOISTURE CONTENT (%):	53.2	FINAL MOISTURE CONTENT (%):	53.2

CONSOLIDATED? (Y/N):	Y	EFFECTIVE PRESSURE (psi):	5
CELL PRESSURE (psi):	60		
BACKPRESSURE (psi):	55		

INITIAL DRY BULK DENSITY (lb/ft^3):	67.1
% COMPACTION:	In-Situ
FINAL DRY BULK DENSITY (lb/ft^3):	72.3

FINAL B PARAMETER READING:	0.96	FINAL BACKPRESSURE (psi):	55

AVERAGE K_{sat}* (cm/s): 1.49E-06 **AVERAGE K_{sat}* (ft/day): 4.22E-03**

MAXIMUM GRADIENT USED: 24.99
MINIMUM GRADIENT USED: 5.91

*Corrected to 20 °C
**All final sample dimensions are subject to sample deformation caused by exsolution of air in pore water.

PROJECT:	Yerington Mine OU 4 - Phase 1 (YER 2051)	**JOB NO:**	9419000740
CLIENT:	Brown and Caldwell	**LAB NO:**	1208L
MATERIAL:	---	**DATE SAMPLED:**	1/16/2009
SAMPLE SOURCE:	OU4-FEP-65-SED	**SAMPLED BY:**	Client

Measurement of Hydraulic Conductivity of Saturated Porous Materials
Using a Flexible Wall Permeameter (ASTM D5084)

SAMPLE PREPARATION: Undisturbed sample extruded into latex membrane and saturated to 95 percent minimum.
METHOD OF COMPACTION: Not Applicable - In-Situ
TESTING METHOD: Method F: Constant Volume Falling Head (by Mercury) Rising Tailwater

FIELD MOISTURE (%):	36.7	LAB MOISTURE (%):	N/A
INITIAL DIAMETER (cm):	6.13	FINAL DIAMETER** (cm):	6.15
INITIAL LENGTH (cm):	10.98	FINAL LENGTH** (cm):	11.072
INITIAL MOISTURE CONTENT (%):	56.5	FINAL MOISTURE CONTENT (%):	65.3

CONSOLIDATED? (Y/N):	Y	EFFECTIVE PRESSURE (psi):	5
CELL PRESSURE (psi):	70		
BACKPRESSURE (psi):	65		

INITIAL DRY BULK DENSITY (lb/ft^3):	61.8
% COMPACTION:	In-Situ
FINAL DRY BULK DENSITY (lb/ft^3):	61.0

FINAL B PARAMETER READING:	0.96	FINAL BACKPRESSURE (psi):	65

AVERAGE K_{sat}* (cm/s): 4.73E-06 **AVERAGE K_{sat}* (ft/day): 1.34E-02**

MAXIMUM GRADIENT USED: 15.37
MINIMUM GRADIENT USED: 3.63

*Corrected to 20 °C
**All final sample dimensions are subject to sample deformation caused by exsolution of air in pore water.