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**APPENDIX I**  
**GEOTECHNICAL LABORATORY RESULTS - EAST COVE**

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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

# JOHN H. ROBINSON TESTING, INC.

(A Subsidiary of Urban Engineers, Inc.)  
1319 Sassafras Street, Erie, PA 16501  
LABORATORY PHONE (814) 454-0195  
FAX (814) 453-2020

Sub-Surface Investigating  
Field Testing & Inspection  
Soil Mechanics  
Soil Borings  
Reports

Date: July 22, 2008

Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380

Attn: Jeana Wolters  
Project Manager

Re: CGMN – East Cove  
02181-202-050-0001  
GT01-0-0010: 6/27/08 @ 0924 hours  
JHR Project 2008500.061

Lab Ref.: S-08-0173-1  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 16.8      As-received, Dry Basis, %: 20.2

**ASTM D-854, Specific Gravity:**

1.618

**ASTM D-4318, Atterberg Limits:**

LL = NP      PL = NP      PI = NP

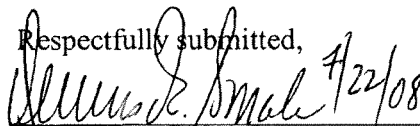
**ASTM D-2974, Total Organics by Ignition, %:**

1.7

**ASTM D-422, Grain Size Distribution (Curve Attached):**

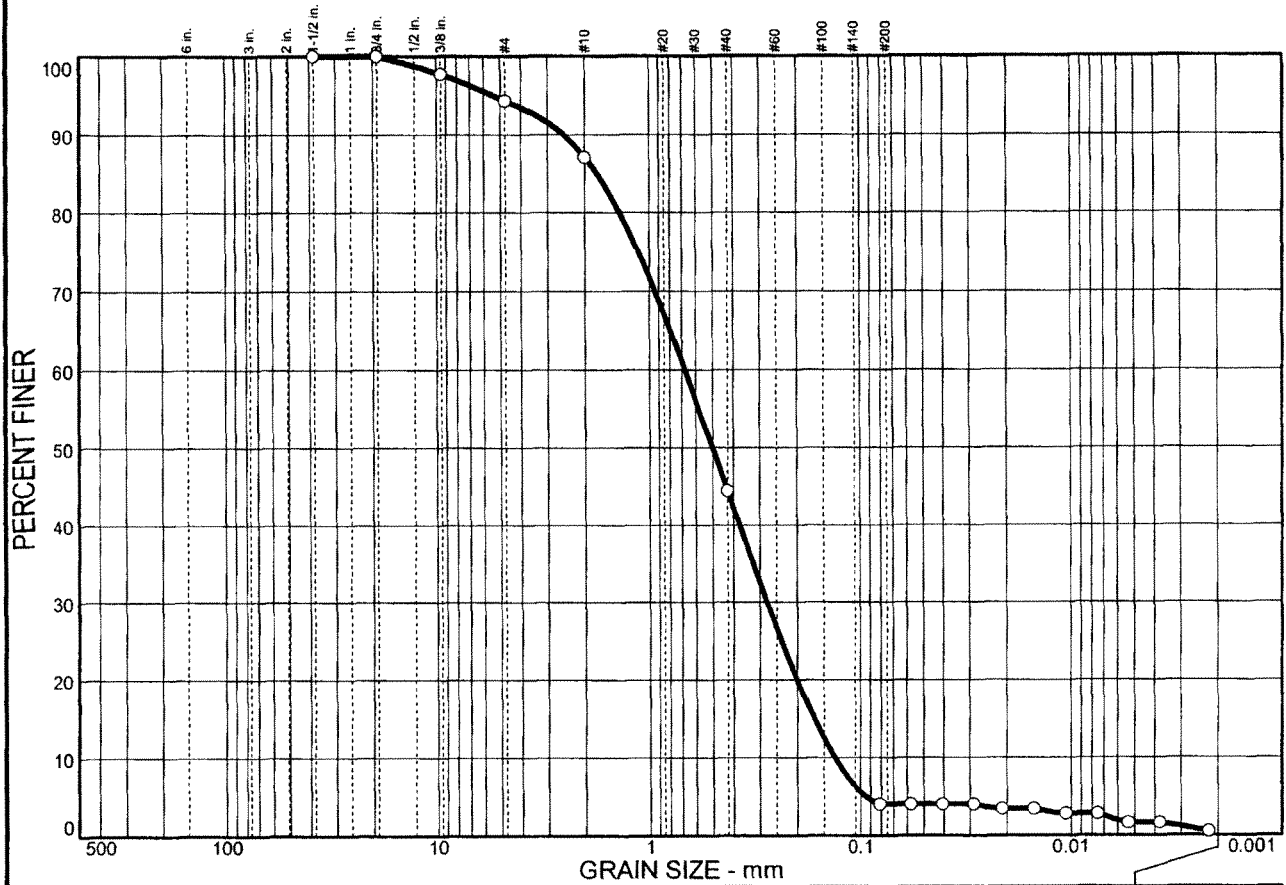
Gravel = 5.7    Sand = 90.3    Silt = 4.0    Clay = 0.0

Respectfully submitted,



Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	5.7	90.3	4.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	97.7		
#4	94.3		
#10	87.1		
#40	44.4		

**Material Description**

USDA: Sand / USCS: Poorly graded sand  
 As-received Moisture = 20.2% Dry Basis ; 16.8% Wet Basis  
 Total Organics = 1.7%

**Atterberg Limits**

PL= NP      LL= NP      PI= NP

**Coefficients**

D<sub>85</sub>= 1.76      D<sub>60</sub>= 0.677      D<sub>50</sub>= 0.501  
 D<sub>30</sub>= 0.278      D<sub>15</sub>= 0.166      D<sub>10</sub>= 0.133  
 C<sub>u</sub>= 5.09      C<sub>c</sub>= 0.86

**Classification**

USCS= SP      AASHTO= A-1-b

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-1  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT01-0-0010

Source of Sample: East Cove, CGMN

Date: 07-21-2008

Location: Sediment: 06/27/08 @ 0924 hrs.

Elev./Depth: 1.0 - 2.5

**URBAN ENGINEERS  
OF  
ERIE, INC.**

Client: Weston Solutions  
 Project: CGMN Site Investigation

Project No: 02181-202-050-0001

Figure No. 173-1

Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT01-0-0047: 6/27/08 @ 0943 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-2  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 43.2      As-received, Dry Basis, %: 76.0

**ASTM D-854, Specific Gravity:**

1.735

**ASTM D-4318, Atterberg Limits:**

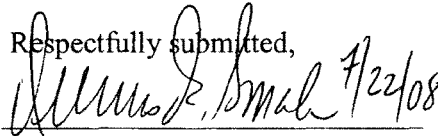
LL = 40.1    PL = 30.3    PI = 9.8

**ASTM D-2974, Total Organics by Ignition, %:**

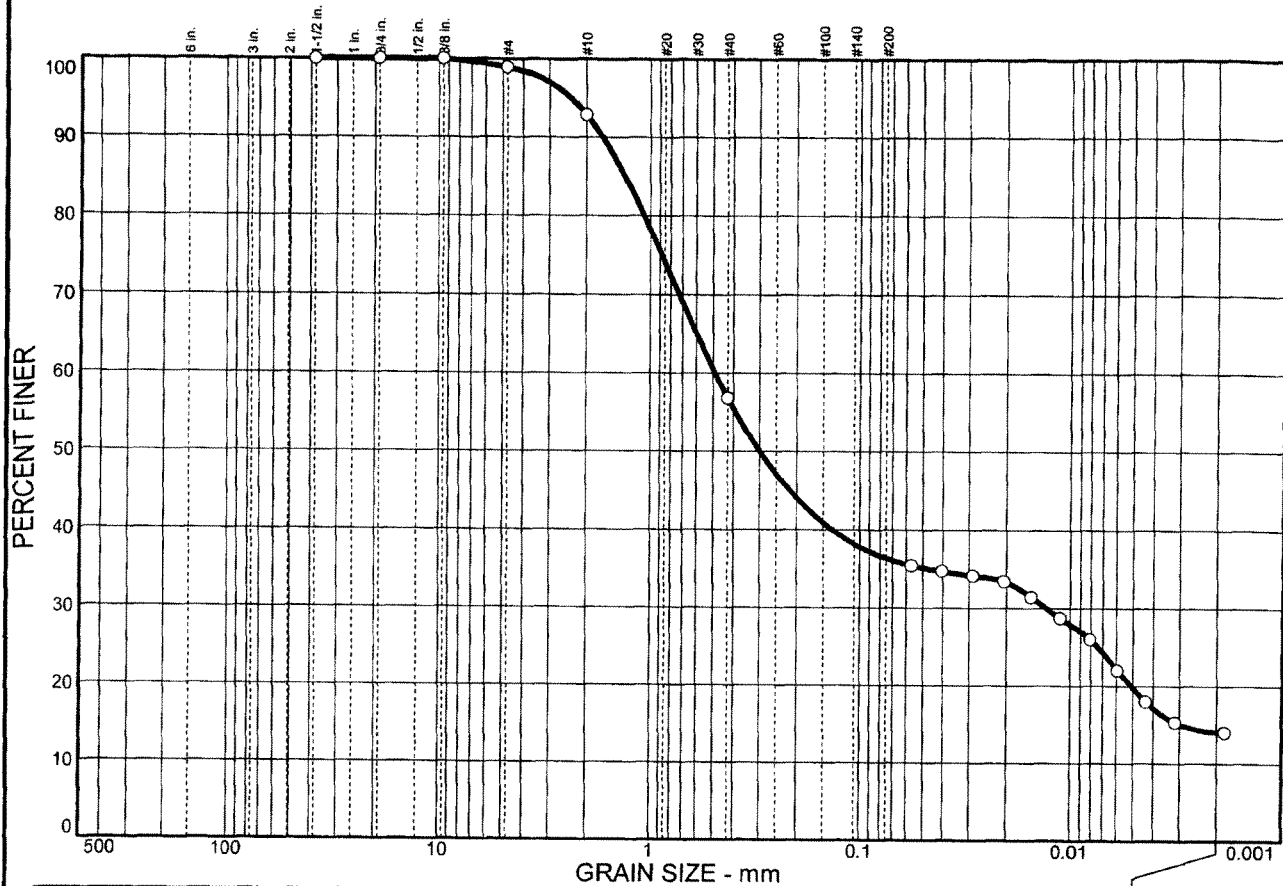
15.9

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 1.1    Sand = 62.6    Silt = 22.3    Clay = 14.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.1	62.6	22.3	14.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	98.9		
#10	92.8		
#40	56.8		

**Material Description**

USDA: Sandy loam / USCS: Silty sand  
 As-received Moisture = 76.0% Dry Basis ; 43.2% Wet Basis  
 Total Organics = 15.9%

**Atterberg Limits**

PL= 30.3      LL= 40.1      PI= 9.8

**Coefficients**

D<sub>85</sub>= 1.32      D<sub>60</sub>= 0.489      D<sub>50</sub>= 0.300  
 D<sub>30</sub>= 0.0130      D<sub>15</sub>= 0.0030      D<sub>10</sub>=  
 C<sub>u</sub>=      C<sub>c</sub>=

**Classification**

USCS= SM      AASHTO= A-4(0)

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-2  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT01-0-0047      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/27/08 @ 0943 hrs      Elev./Depth: 4.7 - 5.8

<b>URBAN ENGINEERS OF ERIE, INC.</b>	Client: Weston Solutions Project: CGMN Site Investigation Project No: 02181-202-050-0001      Figure No. 173-2
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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Reports

Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT01-0-0092: 6/27/08 @ 1001 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-3  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 42.6      As-received, Dry Basis, %: 74.2

**ASTM D-854, Specific Gravity:**

1.705

**ASTM D-4318, Atterberg Limits:**

LL = 53.4    PL = 36.8    PI = 16.6

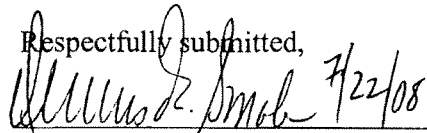
**ASTM D-2974, Total Organics by Ignition, %:**

18.4

**ASTM D-422, Grain Size Distribution (Curve Attached):**

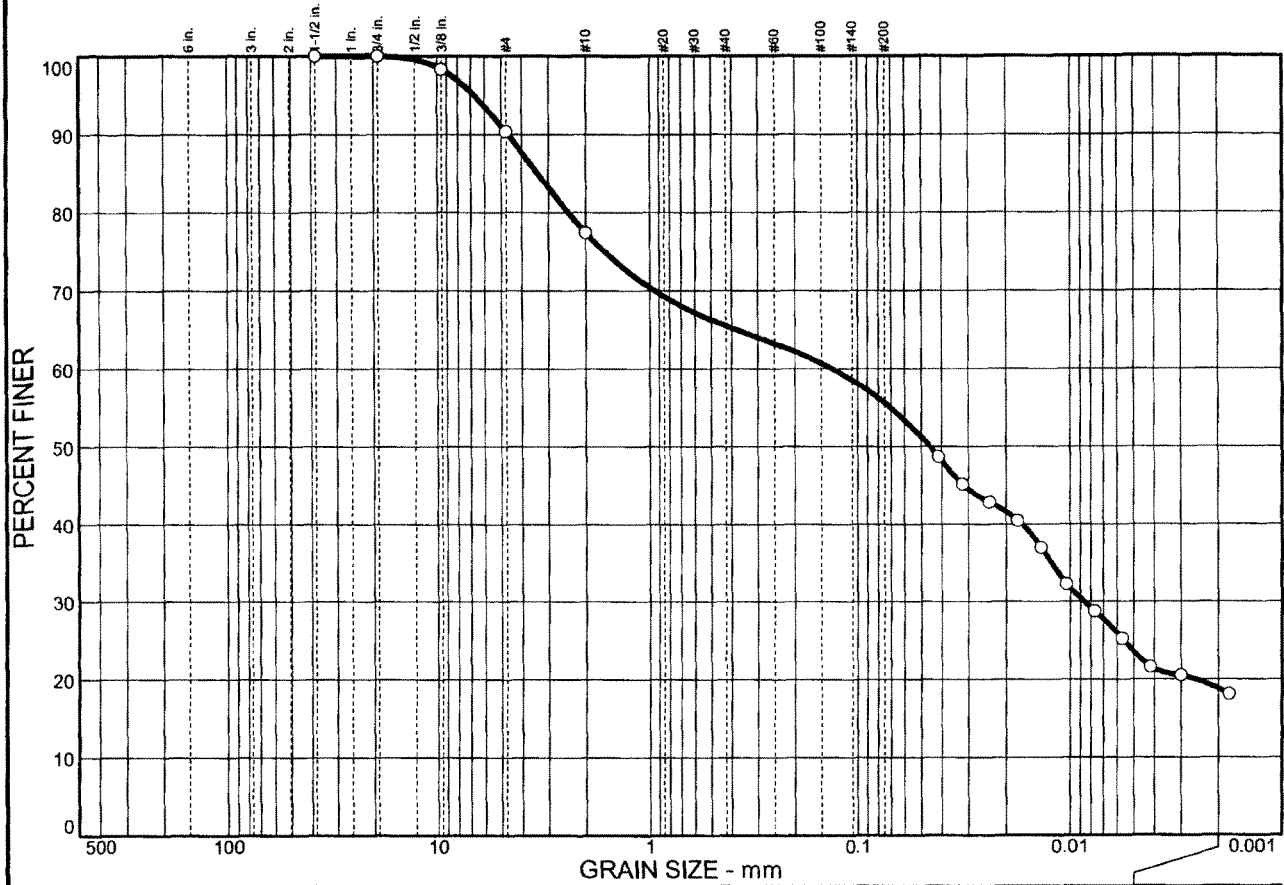
Gravel = 9.7    Sand = 34.6    Silt = 36.9    Clay = 18.8

Respectfully submitted,



Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	9.7	34.6	36.9	18.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	98.3		
#4	90.3		
#10	77.4		

**Material Description**

USDA: Loam / USCS: Sandy elastic silt  
 As-received Moisture = 74.2% Dry Basis ; 42.6% Wet Basis  
 Total Organics = 18.4%

**Atterberg Limits**

PL= 36.8      LL= 53.4      PI= 16.6

**Coefficients**

D<sub>85</sub>= 3.36      D<sub>60</sub>= 0.133      D<sub>50</sub>= 0.0455  
 D<sub>30</sub>= 0.0087      D<sub>15</sub>=      D<sub>10</sub>=  
 C<sub>u</sub>=      C<sub>c</sub>=

**Classification**

USCS= MH      AASHTO= A-7-5(8)

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-3  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT01-0-0092      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment 06/27/08 @ 1001 hrs      Elev./Depth: 9.2 - 11.0

<b>URBAN ENGINEERS OF ERIE, INC.</b>	Client: Weston Solutions Project: CGMN Site Investigation  Project No: 02181-202-050-0001	Figure No. 173-3
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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Sub-Surface Investigating  
Field Testing & Inspection  
Soil Mechanics  
Soil Borings  
Reports

Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT02-0-0002: 6/26/08 @ 1405 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-4  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 15.5      As-received, Dry Basis, %: 18.3

**ASTM D-854, Specific Gravity:**

1.633

**ASTM D-4318, Atterberg Limits:**

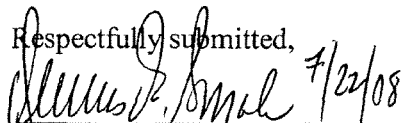
LL = NP    PL = NP    PI = NP

**ASTM D-2974, Total Organics by Ignition, %:**

2.3

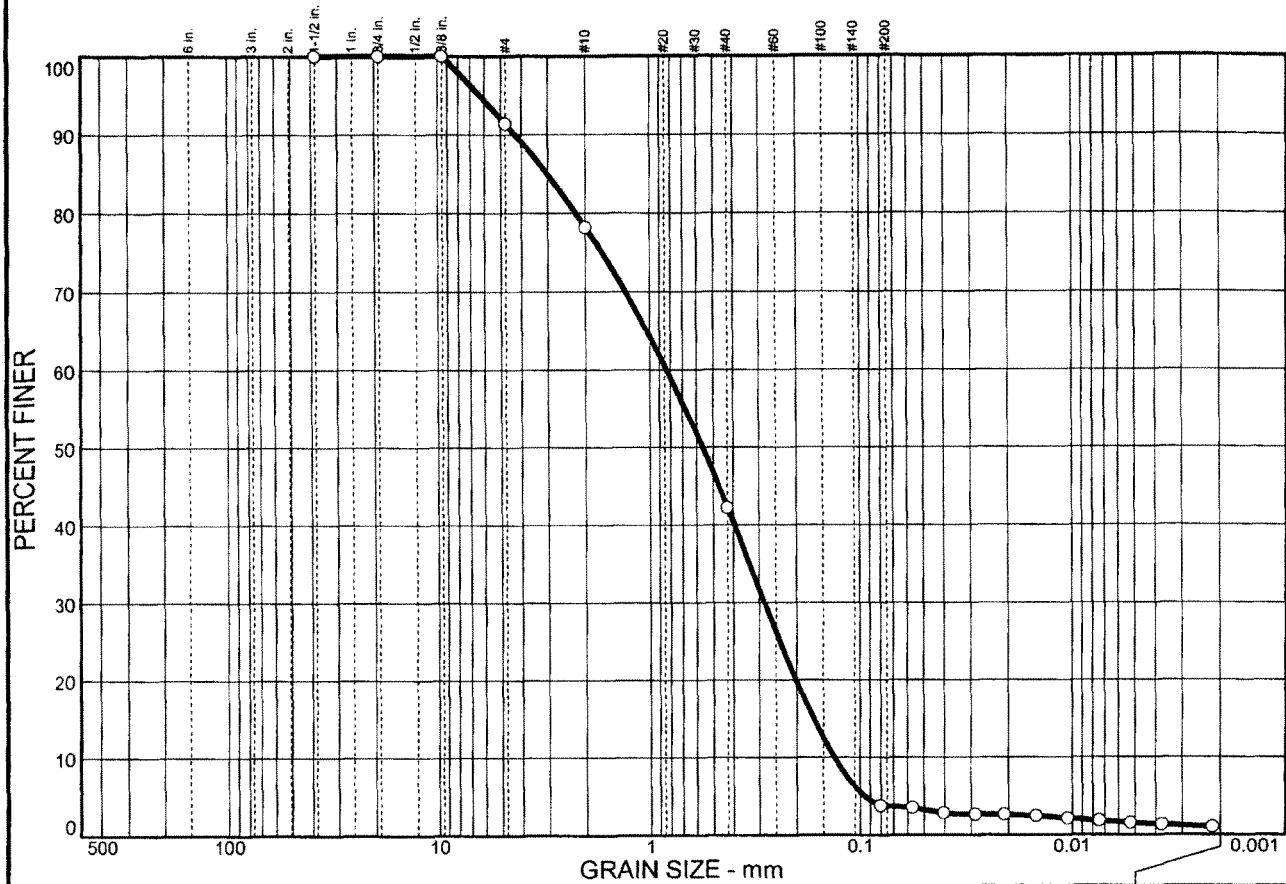
**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 8.6    Sand = 87.7    Silt = 3.7    Clay = 0.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent



# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT
0.0	8.6	87.7	3.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	91.4		
#10	78.2		
#40	42.2		

**Material Description**

USDA: Sand / USCS: Poorly graded sand  
 As-received Moisture = 18.3% Dry Basis ; 15.5% Wet Basis  
 Total Organics = 2.3%

**Atterberg Limits**  
 PL= NP      LL= NP      PI= NP

**Coefficients**  
 D<sub>85</sub>= 3.03      D<sub>60</sub>= 0.831      D<sub>50</sub>= 0.561  
 D<sub>30</sub>= 0.283      D<sub>15</sub>= 0.166      D<sub>10</sub>= 0.133  
 C<sub>u</sub>= 6.26      C<sub>c</sub>= 0.73

**Classification**  
 USCS= SP      AASHTO= A-1-b

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-4  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

**Sample No.:** GT02-0-0002      **Source of Sample:** East Cove, CGMN      **Date:** 07-21-2008  
**Location:** Sediment: 06/26/08 @ 1405 hrs      **Elev./Depth:** 0.2 - 1.5

**URBAN ENGINEERS  
OF  
ERIE, INC.**

**Client:** Weston Solutions  
**Project:** CGMN Site Investigation  
**Project No:** 02181-202-050-0001      **Figure No.** 173-4

Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Field Testing & Inspection  
Soil Mechanics  
Soil Borings  
Reports

Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT02-0-0020: 6/26/08 @ 1446 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-5  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 40.4      As-received, Dry Basis, %: 67.9

**ASTM D-854, Specific Gravity:**

1.701

**ASTM D-4318, Atterberg Limits:**

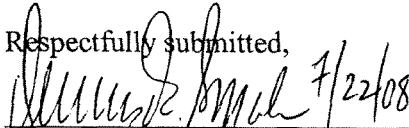
LL = 39.1    PL = 33.7    PI = 5.4

**ASTM D-2974, Total Organics by Ignition, %:**

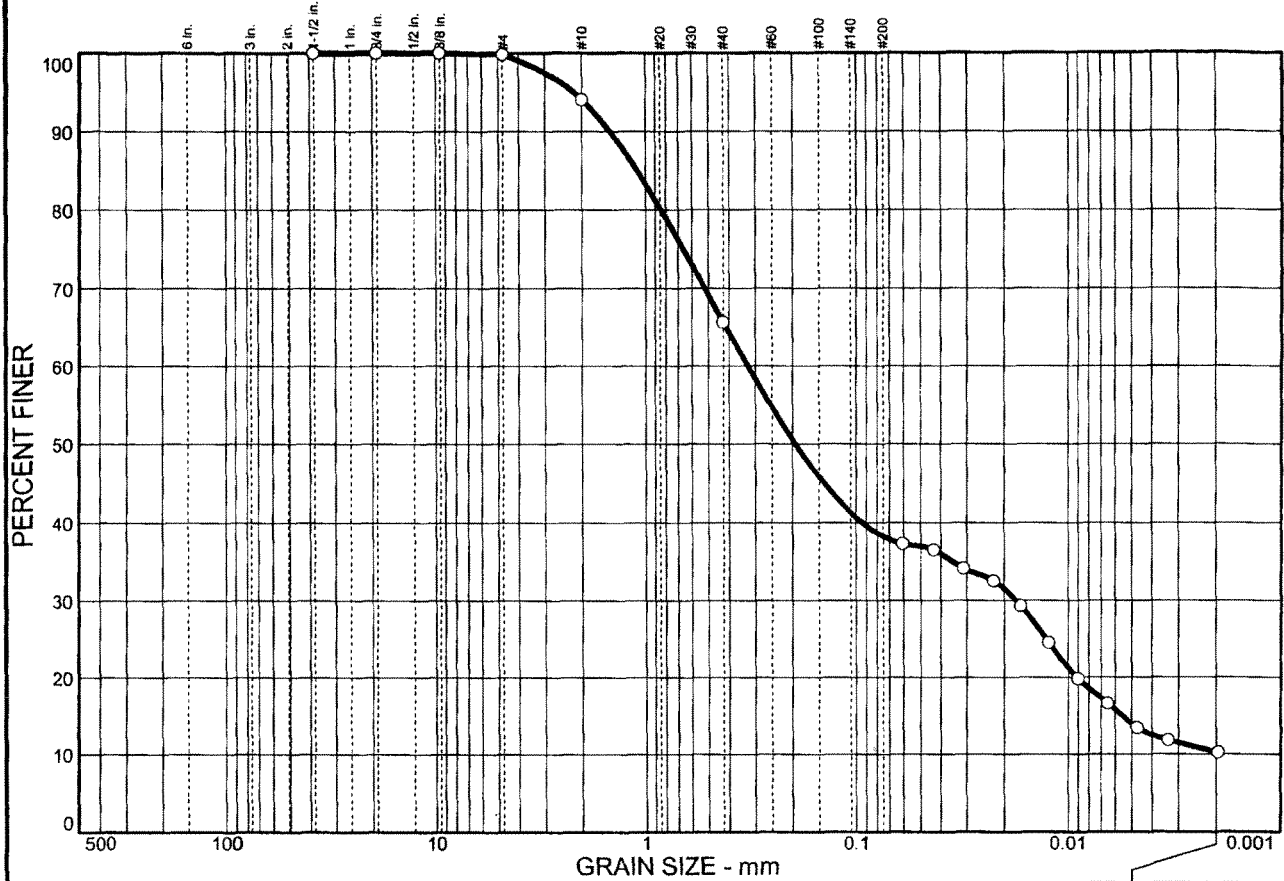
8.2

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 0.2    Sand = 61.6    Silt = 27.9    Clay = 10.3

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.2	61.6	27.9	10.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.8		
#10	94.0		
#40	65.6		

**Material Description**

USDA: Sandy loam / USCS: Silty sand  
 As-received Moisture = 67.9% Dry Basis ; 40.4% Wet Basis  
 Total Organics = 8.2%

**Atterberg Limits**

PL= 33.7      LL= 39.1      PI= 5.4

**Coefficients**

D<sub>85</sub>= 1.09      D<sub>60</sub>= 0.326      D<sub>50</sub>= 0.194  
 D<sub>30</sub>= 0.0176      D<sub>15</sub>= 0.0056      D<sub>10</sub>=  
 C<sub>u</sub>=              C<sub>c</sub>=

**Classification**

USCS= SM              AASHTO= A-4(0)

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-5  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT02-0-0020      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1446 hrs      Elev./Depth: 2.0 - 3.5

<h2>URBAN ENGINEERS OF ERIE, INC.</h2>	<p>Client: Weston Solutions          Project: CGMN Site Investigation          Project No: 02181-202-050-0001      Figure No. 173-5</p>
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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Reports

Date: July 22, 2008  
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Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT02-0-0068: 6/26/08 @ 1607 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-6  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 47.3      As-received, Dry Basis, %: 89.9

**ASTM D-854, Specific Gravity:**

1.743

**ASTM D-4318, Atterberg Limits:**

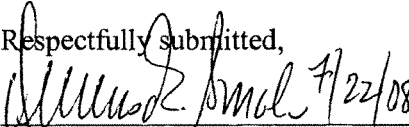
LL = 55.5    PL = 44.2    PI = 11.3

**ASTM D-2974, Total Organics by Ignition, %:**

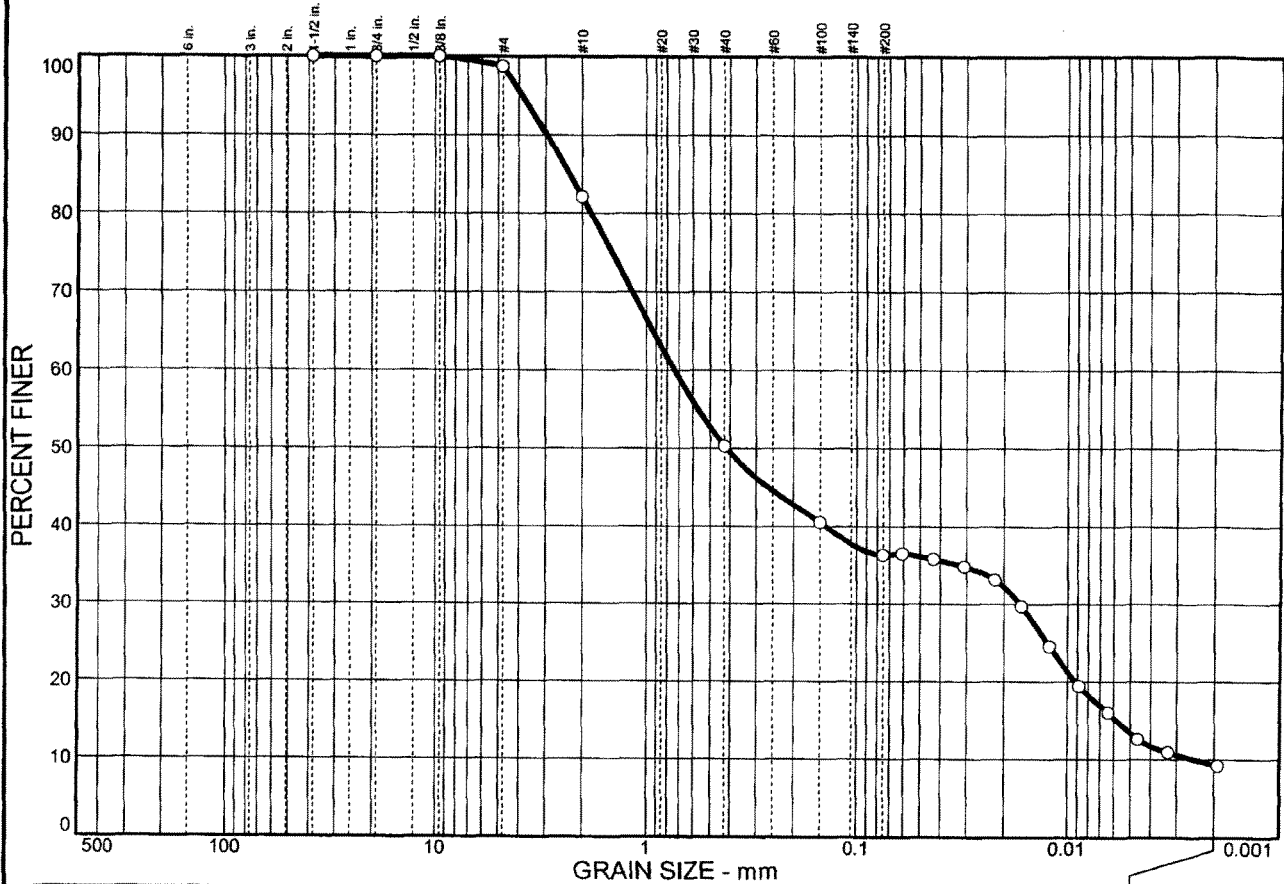
12.3

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 1.3    Sand = 62.4    Silt = 27.0    Clay = 9.3

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.3	62.4	27.0	9.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	98.7		
#10	82.1		
#40	50.3		
#100	40.5		
#200	36.3		

**Material Description**

USDA: Sandy loam / USCS: Silty sand  
 As-received Moisture = 89.9% Dry Basis ; 47.3% Wet Basis  
 Total Organics = 12.3%

**Atterberg Limits**

PL= 44.2      LL= 55.5      PI= 11.3

**Coefficients**

D<sub>85</sub>= 2.30      D<sub>60</sub>= 0.736      D<sub>50</sub>= 0.416  
 D<sub>30</sub>= 0.0168      D<sub>15</sub>= 0.0058      D<sub>10</sub>= 0.0025  
 C<sub>u</sub>= 296.09      C<sub>c</sub>= 0.15

**Classification**

USCS= SM      AASHTO= A-7-5(1)

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-6  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT02-0-0068      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1607 hrs      Elev./Depth: 6.8 - 7.5

**URBAN ENGINEERS  
OF  
ERIE, INC.**

Client: Weston Solutions  
 Project: CGMN Site Investigation

Project No: 02181-202-050-0001

Figure No. 173-6

Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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(A Subsidiary of Urban Engineers, Inc.)  
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Soil Borings  
Reports

Date: July 22, 2008  
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West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT02-0-0092: 6/26/08 @ 1539 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-7  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 48.8      As-received, Dry Basis, %: 95.2

**ASTM D-854, Specific Gravity:**

1.746

**ASTM D-4318, Atterberg Limits:**

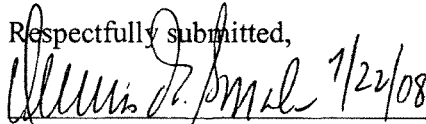
LL = 51.3    PL = 41.5    PI = 9.8

**ASTM D-2974, Total Organics by Ignition, %:**

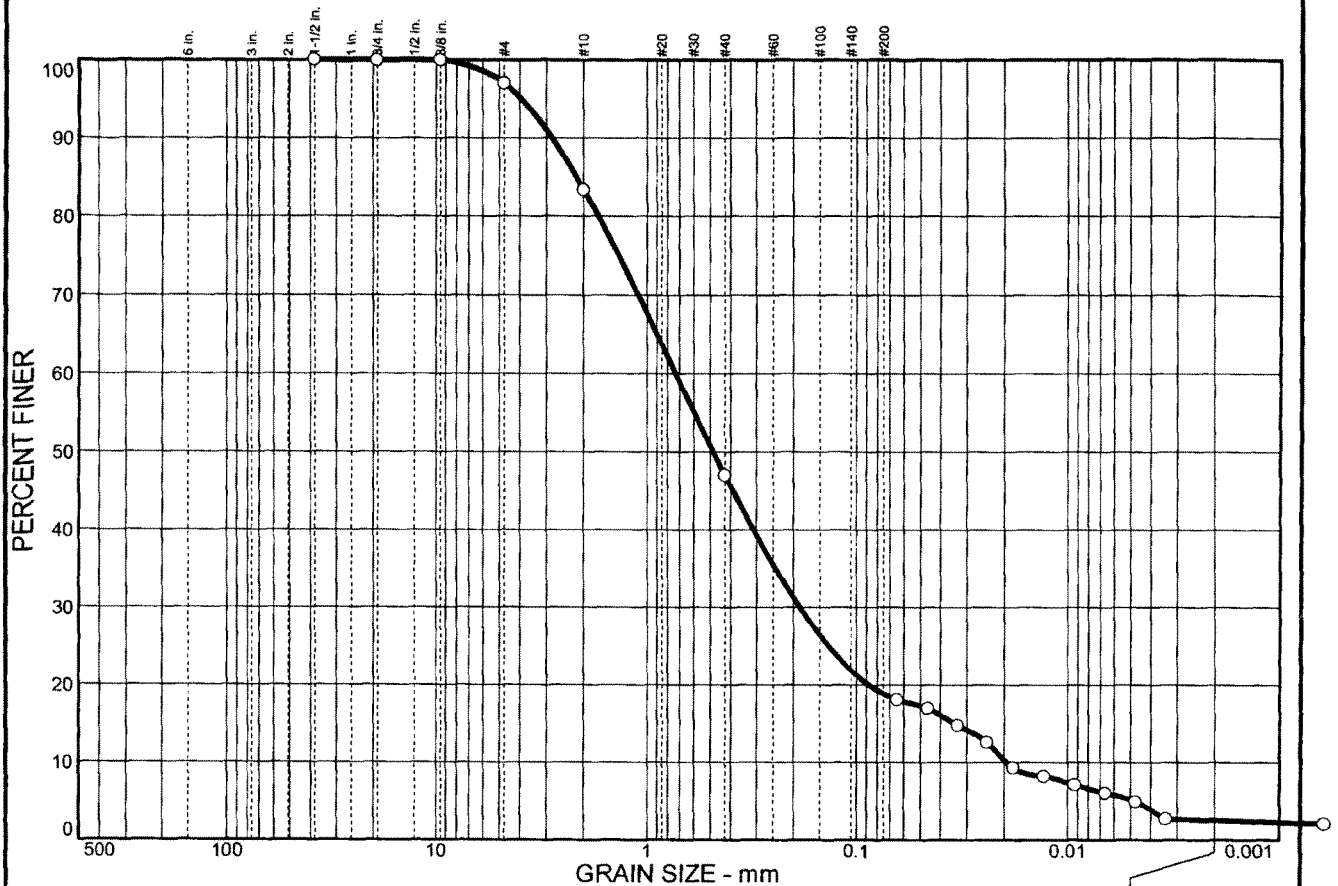
21.9

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 3.0    Sand = 78.1    Silt = 16.3    Clay = 2.6

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	3.0	78.1	16.3	2.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	97.0		
#10	83.4		
#40	47.0		

**Material Description**

USDA: Loamy sand / USCS: Silty sand  
 As-received Moisture = 95.2% Dry Basis ; 48.8% Wet Basis  
 Total Organics = 21.9%

**Atterberg Limits**

PL= 41.5      LL= 51.3      PI= 9.8

**Coefficients**

D<sub>85</sub>= 2.16      D<sub>60</sub>= 0.731      D<sub>50</sub>= 0.483  
 D<sub>30</sub>= 0.187      D<sub>15</sub>= 0.0344      D<sub>10</sub>= 0.0195  
 C<sub>u</sub>= 37.49      C<sub>c</sub>= 2.45

**Classification**

USCS= SM      AASHTO= A-8

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-7  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT02-0-0092      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1539 hrs      Elev./Depth: 9.2 - 11.0

**URBAN ENGINEERS  
OF  
ERIE, INC.**

Client: Weston Solutions  
 Project: CGMN Site Investigation

Project No: 02181-202-050-0001

Figure No. 173-7

Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

# JOHN H. ROBINSON TESTING, INC.

(A Subsidiary of Urban Engineers, Inc.)  
1319 Sassafra Street, Erie, PA 16501  
LABORATORY PHONE (814) 454-0195  
FAX (814) 453-2020

Sub-Surface Investigating  
Field Testing & Inspection  
Soil Mechanics  
Soil Borings  
Reports

Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT02-0-0140: 6/26/08 @ 1547 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-8  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 17.7      As-received, Dry Basis, %: 21.6

**ASTM D-854, Specific Gravity:**

1.617

**ASTM D-4318, Atterberg Limits:**

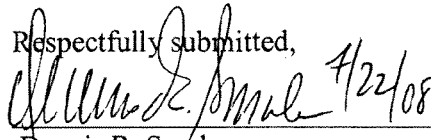
LL = NP    PL = NP    PI = NP

**ASTM D-2974, Total Organics by Ignition, %:**

0.9

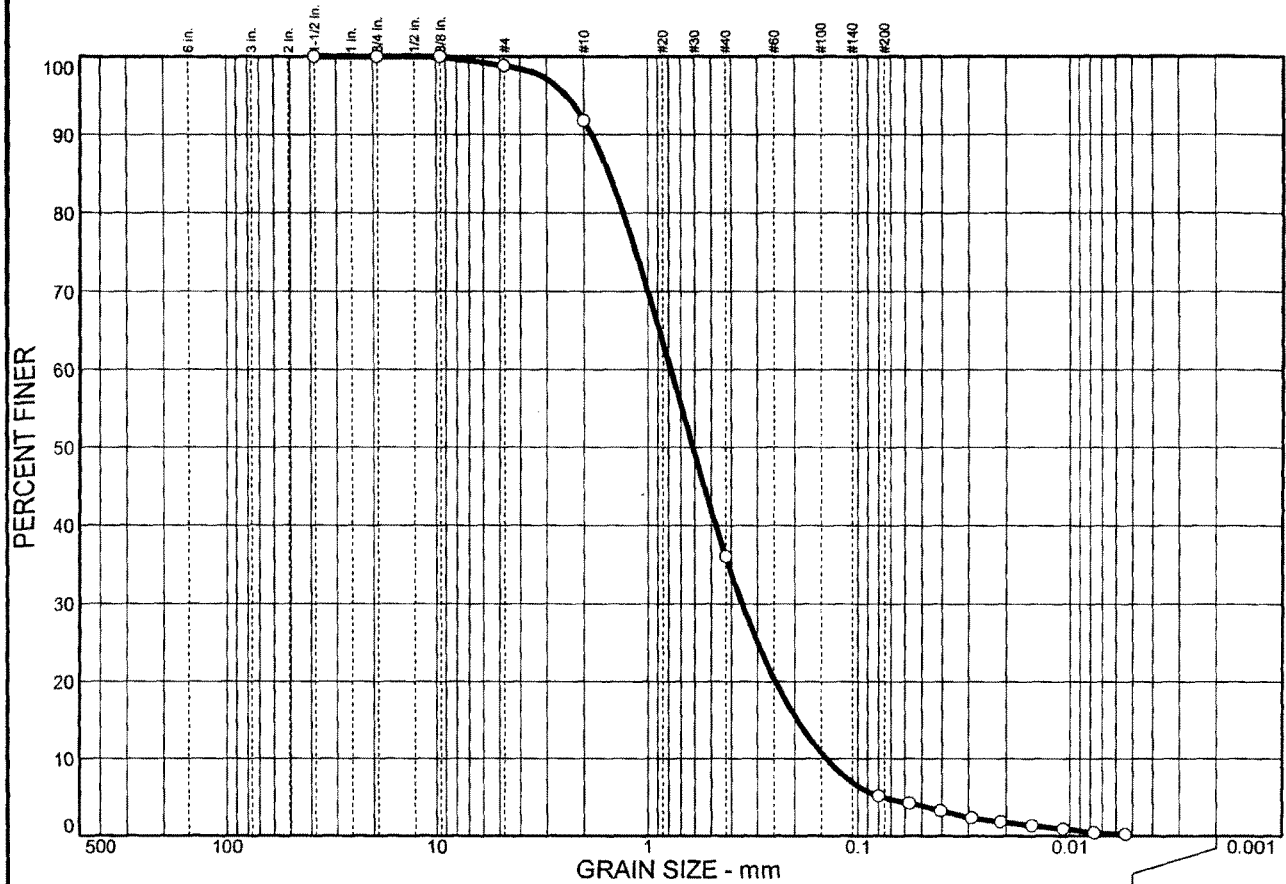
**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 1.2    Sand = 93.9    Silt = 4.9    Clay = 0.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent



# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.2	93.9	4.9	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	98.8		
#10	91.8		
#40	36.0		

**Material Description**

USDA: Sand / USCS: Poorly graded sand  
 As-received Moisture = 21.6% Dry Basis ; 17.7% Wet Basis  
 Total Organics = 0.9%

**Atterberg Limits**

PL= NP      LL= NP      PI= NP

**Coefficients**

D<sub>85</sub>= 1.53      D<sub>60</sub>= 0.781      D<sub>50</sub>= 0.612  
 D<sub>30</sub>= 0.355      D<sub>15</sub>= 0.194      D<sub>10</sub>= 0.142  
 C<sub>u</sub>= 5.50      C<sub>c</sub>= 1.13

**Classification**

USCS= SP      AASHTO= A-1-b

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-8  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT02-0-0140      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1547 hrs      Elev./Depth: 14.0 - 15.0

<b>URBAN ENGINEERS OF ERIE, INC.</b>	Client: Weston Solutions Project: CGMN Site Investigation Project No: 02181-202-050-0001      Figure No. 173-8
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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT03-0-0020: 6/26/08 @ 1656 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-9  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 23.2      As-received, Dry Basis, %: 30.3

**ASTM D-854, Specific Gravity:**

1.656

**ASTM D-4318, Atterberg Limits:**

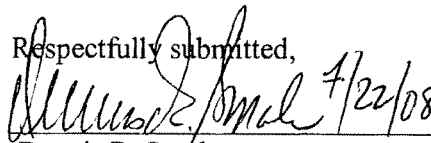
LL = NP    PL = NP    PI = NP

**ASTM D-2974, Total Organics by Ignition, %:**

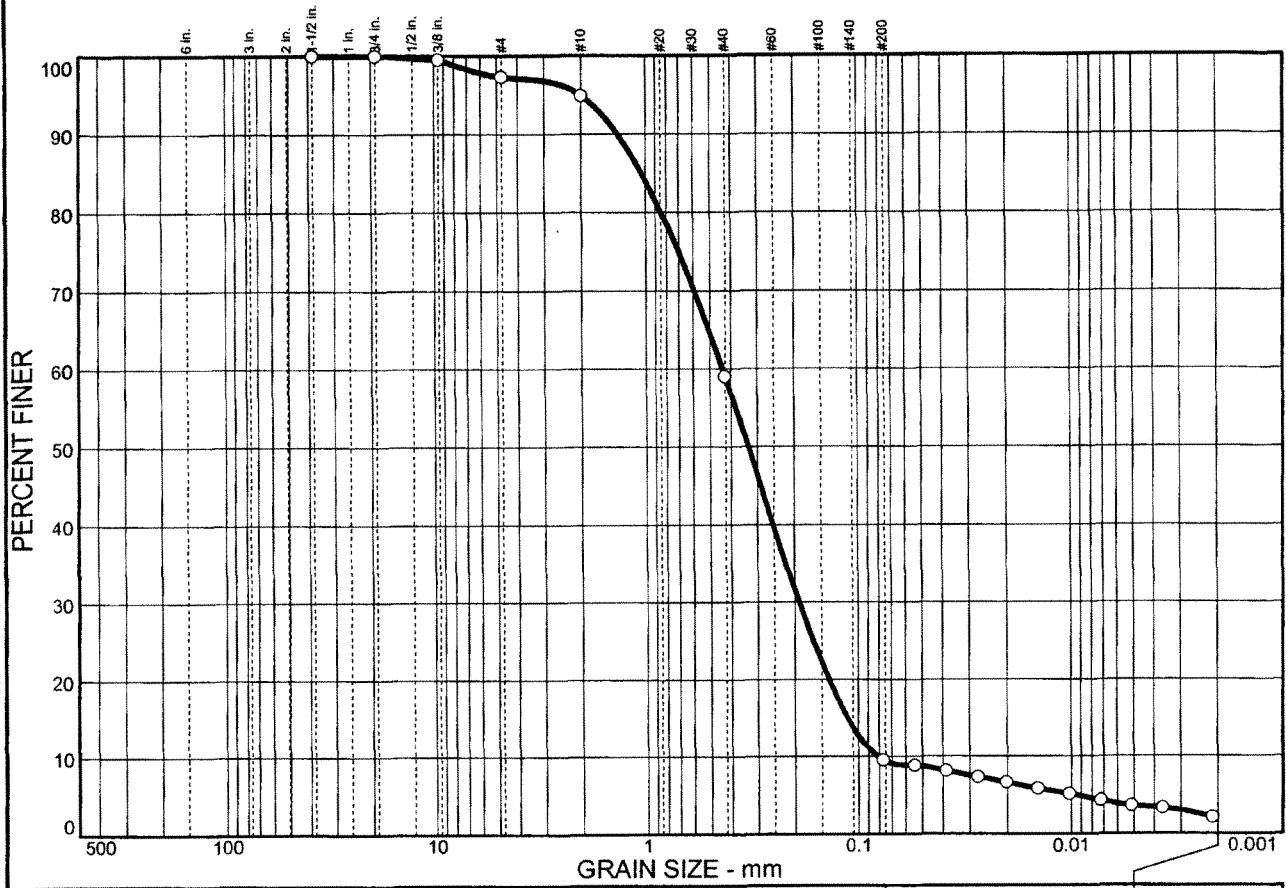
2.0

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 2.7    Sand = 87.9    Silt = 9.4    Clay = 0.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	2.7	87.9	9.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	99.5		
#4	97.3		
#10	94.9		
#40	59.0		

**Material Description**

USDA: Sand / USCS: Poorly graded sand with silt  
 As-received Moisture = 30.3% Dry Basis ; 23.2% Wet Basis  
 Total Organics = 2.0%

**Atterberg Limits**

PL= NP      LL= NP      PI= NP

**Coefficients**

D<sub>85</sub>= 1.05      D<sub>60</sub>= 0.437      D<sub>50</sub>= 0.331  
 D<sub>30</sub>= 0.191      D<sub>15</sub>= 0.112      D<sub>10</sub>= 0.0816  
 C<sub>u</sub>= 5.36      C<sub>c</sub>= 1.02

**Classification**

USCS= SP-SM      AASHTO= A-3

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-9  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT03-0-0020      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1656 hrs      Elev./Depth: 2.0 - 3.0

<b>URBAN ENGINEERS OF ERIE, INC.</b>	Client: Weston Solutions Project: CGMN Site Investigation Project No: 02181-202-050-0001	Figure No. 173-9
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Non Destructive Testing  
Building Materials  
Aggregates  
Concrete  
Soils

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Date: July 22, 2008  
Client: Weston Solutions  
1400 Weston Way, Bldg. 5-2  
West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT03-0-0055: 6/26/08 @ 1714 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-10  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 23.9      As-received, Dry Basis, %: 31.4

**ASTM D-854, Specific Gravity:**

1.653

**ASTM D-4318, Atterberg Limits:**

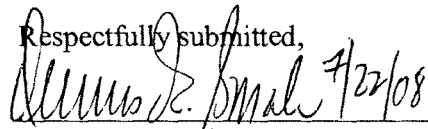
LL = 27.3    PL = 22.1    PI = 5.2

**ASTM D-2974, Total Organics by Ignition, %:**

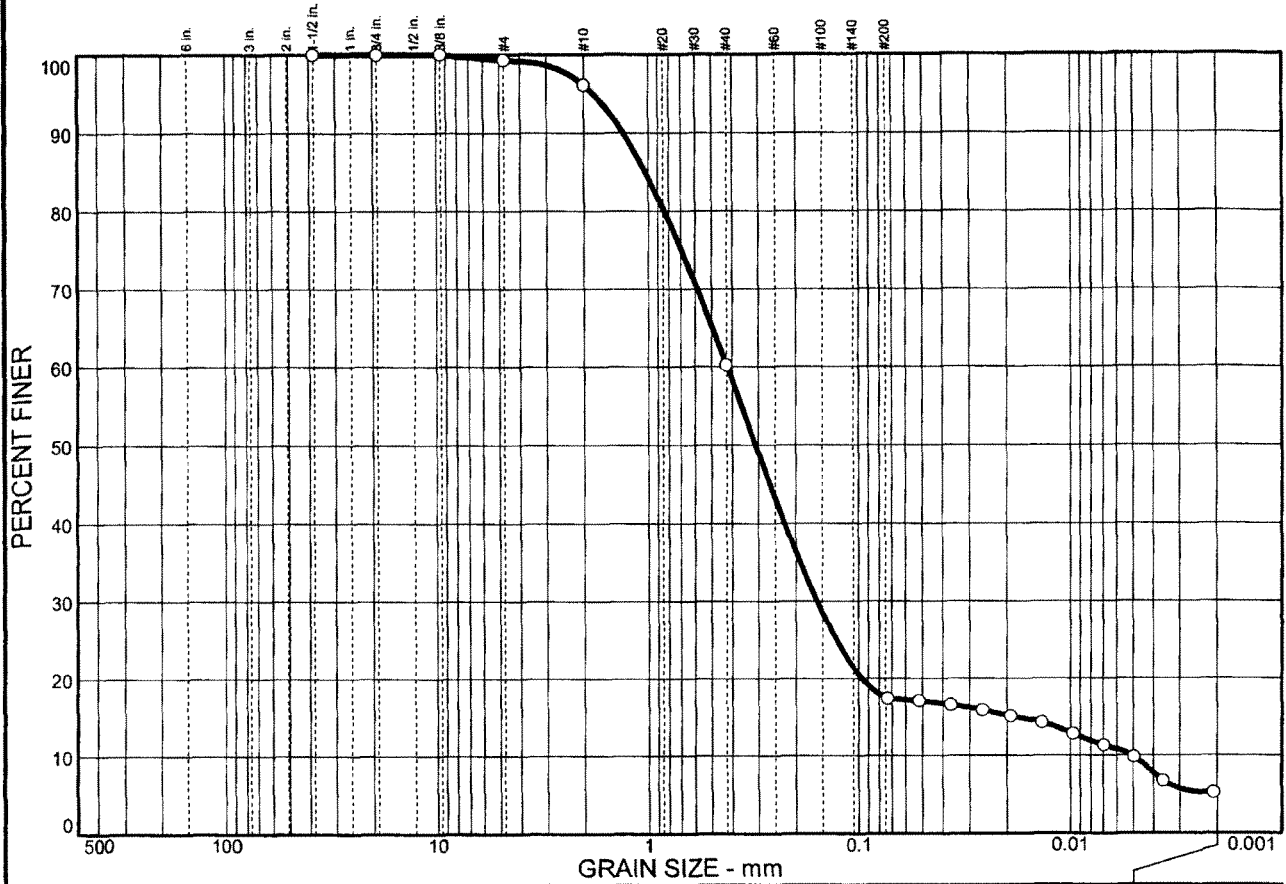
3.8

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 0.7    Sand = 81.8    Silt = 17.5    Clay = 0.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.7	81.8	17.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	100.0		
#4	99.3		
#10	96.1		
#40	60.2		

**Material Description**

USDA: Sand / USCS: Silty sand  
 As-received Moisture = 31.4% Dry Basis ; 23.9% Wet Basis  
 Total organics = 3.8%

**Atterberg Limits**

PL= 22.1      LL= 27.3      PI= 5.2

**Coefficients**

D<sub>85</sub>= 1.03      D<sub>60</sub>= 0.422      D<sub>50</sub>= 0.310  
 D<sub>30</sub>= 0.159      D<sub>15</sub>= 0.0183      D<sub>10</sub>= 0.0051  
 C<sub>u</sub>= 82.86      C<sub>c</sub>= 11.70

**Classification**

USCS= SM      AASHTO= A-2-4(0)

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-10  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT03-0-0055      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1714 hrs      Elev./Depth: 5.5 - 6.3

<b>URBAN ENGINEERS OF ERIE, INC.</b>	Client: Weston Solutions Project: CGMN Site Investigation Project No: 02181-202-050-0001	Figure No. 173-10
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Non Destructive Testing  
Building Materials  
Aggregates  
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West Chester, PA. 19380  
Attn: Jeana Wolters  
Project Manager  
Re: CGMN – East Cove  
02181-202-050-0001  
GT03-0-0110: 6/26/08 @ 1735 hours  
JHR Project 2008500.061  
Lab Ref.: S-08-0173-11  
Received: 07-01-2008  
Examined with the following results:

**ASTM D-2216, Moisture Content:**

As-received, Wet Basis, %: 15.2      As-received, Dry Basis, %: 18.0

**ASTM D-854, Specific Gravity:**

1.632

**ASTM D-4318, Atterberg Limits:**

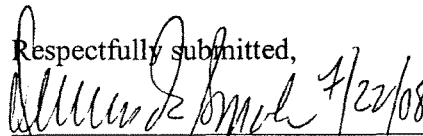
LL = NP    PL = NP    PI = NP

**ASTM D-2974, Total Organics by Ignition, %:**

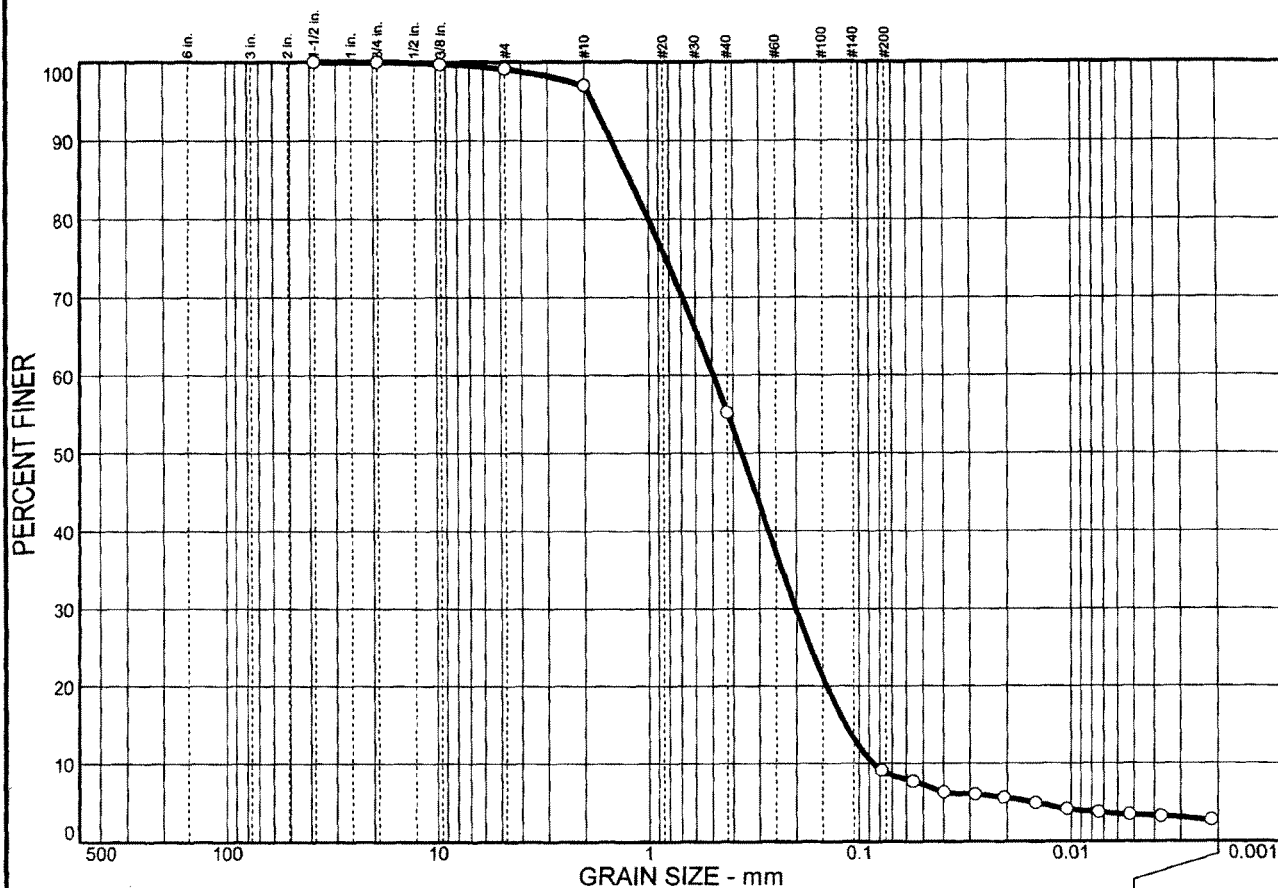
1.0

**ASTM D-422, Grain Size Distribution (Curve Attached):**

Gravel = 0.9    Sand = 90.3    Silt = 8.8    Clay = 0.0

Respectfully submitted,  
  
Dennis R. Smale  
Laboratory Superintendent

# Grain Size Distribution Test Report



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.9	90.3	8.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
0.75 in.	100.0		
0.375 in.	99.7		
#4	99.1		
#10	97.0		
#40	55.2		

**Material Description**

USDA: Sand / USCS: Poorly graded sand with silt  
 As-received Moisture = 18.0% Dry Basis ; 15.2% Wet Basis  
 Total Organics = 1.0%

**Atterberg Limits**  
 PL= NP      LL= NP      PI= NP

**Coefficients**  
 D<sub>85</sub>= 1.22      D<sub>60</sub>= 0.494      D<sub>50</sub>= 0.364  
 D<sub>30</sub>= 0.201      D<sub>15</sub>= 0.116      D<sub>10</sub>= 0.0857  
 C<sub>u</sub>= 5.76      C<sub>c</sub>= 0.96

**Classification**  
 USCS= SP-SM      AASHTO= A-3

**Remarks**

Received 07-01-2008  
 Lab Ref.: S-08-0173-11  
 Sampled by: T. Frinak / Weston

\* (no specification provided)

Sample No.: GT03-0-0110      Source of Sample: East Cove, CGMN      Date: 07-21-2008  
 Location: Sediment: 06/26/08 @ 1735 hrs      Elev./Depth: 11.0 - 11.8

**URBAN ENGINEERS  
OF  
ERIE, INC.**

Client: Weston Solutions  
 Project: CGMN Site Investigation

Project No: 02181-202-050-0001

Figure No. 0173-11