SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

Dense, brown, slightly sandy SILT; moist; locally blocky texture, scattered to locally abundant organics, scattered sand seams with iron-oxide staining; (Topsoil) ML.

Dense, brown and gray, sandy GRAVEL; moist; scattered granodiorite cobbles; (Qc) GP.

Brown, slightly clayey, sandy SILT, trace of gravel; moist; trace of charcoal; (Qc) ML.

GRANODIORITE: Moderate strength, light and dark gray, medium- to coarse-grained, igneous; smooth, closely-spaced, low- to moderate-angle joints with iron-oxide staining, moderately weathered (Tig).
- High-angle joints with strong iron-oxide staining and minor fracture infilling from 6.5 to 6.8 feet.

GRANODIORITE: Very low to moderate strength, light and dark gray, medium- to coarse-grained, igneous; smooth and rough, very closely spaced high- to low-angle joints with iron oxide staining; moderately to highly weathered (Tig).

GRANODIORITE: Moderate strength, light gray and dark gray, medium- to coarse-grained, igneous; closely spaced, low- to moderate-angle smooth to rough joints with iron-oxide staining, moderately weathered with locally highly weathered zones (Tig).
- Highly weathered fracture with about 1/4-inch granodiorite sand infilling at 11.6 feet.
- Very closely spaced fractures from 18 to 18.6 feet.
- Highly weathered zone from 19.5 to 19.7 feet.

CONTINUED NEXT SHEET

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
### Soil Description

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

- Slightly weathered to fresh zone with moderately close fracture spacing from 22.7 to 25.5 feet.
- Highly weathered zone with granodiorite sand infilling from 26.1 to 26.3 feet.
- Highly weathered joints from 32.5 to 32.9 feet.

**Bottom of Boring**

COMPLETED 9/14/2009

### Penetration Resistance (blows/foot)

- Hammer Wt. & Drop: 140 lbs / 30 inches

---

**Notes**

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

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**Index Galena Flood Repairs Project**

Milepost 6.4 to 6.9

Snohomish County, Washington

**LOG OF BORING B-7**

December 2012

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-18
Sheet 2 of 2

REV 3
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water</th>
<th>Depth, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Very loose, brown, sandy SILT; moist; scattered silty sand seams, scattered organics; (Topsoil) ML.

Stiff, brown and gray, clayey SILT, trace of sand; moist; locally scattered roots, mottled; (Qaf) MH.

Gray, silty GRAVEL; moist; primarily boulders and cobbles, scattered, brown sandy and silty clay seams; (Qaf) GM.
- Clay pocket from 4.1 to 4.6 feet.
- Cobble/boulder from 4.9 to 5.8 feet.
- Fractured boulder from 6.3 to 7.4 feet.

Note: Blow counts are artificially high due to the presence of gravel, cobbles, and boulders.
- Boulder from 10.6 to 12.1 feet.
- Fractured boulder from 12.6 to 13.7 feet.

Gray and brown, sandy GRAVEL; moist; numerous cobbles, scattered fractured boulders, scattered weathered granodiorite sand layers; (Qaf) GP.
- Fractured boulder from 14.4 to 15.3 feet.
- Cobble/boulder from 16.8 to 17.3 feet.
- Cobble/boulder from 18.5 to 18.8 feet.

- Cobble/boulder from 21 to 21.6 feet.
- Brown, silty, gravelly sand pocket at 23 feet.
- Fractured boulder from 23.3 to 24.2 feet.
- Brown, silty sand and silty, clayey sand layer from 26.8 to 26.9 feet.
- Cobble from 27.3 to 27.6 feet.
- Cobble/boulder from 28.3 to 28.7 feet.
- 1/8-inch brown, sandy silt layer at 27.9 feet.

CONTINUED NEXT SHEET

LEGEND
* Sample Not Recovered
I Standard Penetration Test
R Rock Core

\[\text{Pi}e\text{zometer Screen and Sand Filter}\]
\[\text{Bentonite-Cement Grout}\]
\[\text{Bentonite Chips/Pellets}\]
\[\text{Bentonite Grout}\]
\[\text{Ground Water Level in VWP}\]

NOTES
1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
### Soil Description

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

#### - Fractured boulder from 28.9 to 29.8 feet.
#### - Cobble/boulder from 31.4 to 31.9 feet.
#### - Cobble/boulder from 32.4 to 32.7 feet.
#### - Cobble/boulder from 33.1 to 33.7 feet.

- Moderately weathered cobble/boulder from 35.4 to 35.7 feet.
- Silty sandy seam at 38.6 feet.
- Highly weathered, fractured granodiorite boulder from 38.9 to 39.9 feet.
- Cobble/boulder from 40 to 40.7 feet.

Gray-brown, slightly sandy to sandy GRAVEL, trace of silt; moist; scattered silty zones and silty sand seams, scattered iron-oxide staining, subangular to angular clasts, scattered cobbles below 46 feet; (Qaf) GP.

- Silty sand seams at 41.2, 43.8, and 44.5 feet.
- Fractured cobble/boulder from 46 to 46.3 feet.
- Slightly clayey, silty sand seam from 46.3 to 46.4 feet.
- Cobble/boulder from 46.6 to 47 feet.
- Cobble/boulder from 47 to 47.4 feet.
- Silty sand seam from 47.8 to 47.9 feet.
- Fractured cobble/boulder from 48.3 to 48.8 feet.
- Fractured cobble/boulder from 49.8 to 50.3 feet.

**Bottom of Boring**

Completed 9/17/2009

### Penetration Resistance

- Hammer Wt. & Drop: 140 lbs / 30 inches

<table>
<thead>
<tr>
<th>Depth ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LEGEND

- Sample Not Recovered
- Standard Penetration Test
- Rock Core
- Piezometer Screen and Sand Filter
- Bentonite-Cement Grout
- Bentonite Chips/Pellets
- Bentonite Grout
- Ground Water Level in WWP

### NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

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**Index Galena Flood Repairs Project**

Milepost 6.4 to 6.9

Snohomish County, Washington

**LOG OF BORING B-8**

December 2012 21-1-21116-031

SHANNON & WILSON, INC. Geotechnical and Environmental Consultants FIG. A-19 Sheet 2 of 2
### SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Ground Water</th>
<th>Samples</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>1</td>
<td></td>
<td>R.1</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td></td>
<td></td>
<td>R.2</td>
<td></td>
</tr>
<tr>
<td>4.9</td>
<td></td>
<td></td>
<td>R.3</td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.0</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Forest Duff.**
- Soft, brown, trace to slightly sandy SILT; trace of clay; moist; abundant organics; (Topsoil) ML.

**Clayey Silt.**
- Soft, gray, clayey SILT to silty CLAY; moist; trace of organics, locally gravelly, locally laminated zones; (QIs) ML/CL.
- Soft to stiff, brown and gray, silty CLAY, trace of sand; moist; mottled, scattered coarse gravel, laminated with locally disturbed texture, scattered organics, scattered silt zones; (QIs) CH.

**NOTE:** Blow counts for sample S-4 are artificially high due to the presence of gravel.
- Silt or sand zone from 10 to 11 feet interpreted based on drill action and drilling fluid loss.

**Very soft to soft, gray, trace of sand to slightly sandy, trace of gravel to slightly gravelly, silty CLAY.**
- Moist to wet; slightly blocky texture, scattered sandy and gravelly zones below approximately 13.0 feet, scattered wood and organics; (QIs) CH.
- 1/2-inch-thick wood fragment at 13 feet.

**Gray, slightly silty, sandy GRAVEL; moist; poor sample recovery, fines likely washed out during drilling, no drilling fluid circulation loss; (Qaf) GP-GM.**

**Soft to very stiff, gray-brown, sandy, gravelly, silty CLAY; moist to wet; scattered cobbles, scattered wood and organics; (QIs) CH/CL.**
- Cobble/boulder from 22.6 to 23.1 feet.
- Wood at 23.6 feet.
- Abundant wood fragments at 28.6 feet.

### PENETRATION RESISTANCE

(Blows/foot)
- Hammer Wt. & Drop: 140 lbs / 30 inches

### LEGEND
- * Sample Not Recovered
- † Standard Penetration Test
- Rock Core
- Grab Sample

### NOTES
1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

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**Index Galena Flood Repairs Project**
Milepost 6.4 to 6.9
Snohomish County, Washington

**LOG OF BORING B-11**

December 2012

21-1-21116-031

SHANNON & WILSON, INC.  Geotechnical and Environmental Consultants  FIG. A-20  Sheet 1 of 2
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water Depth, ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Medium stiff to stiff, gray, trace of sand to sandy, silty CLAY and silty, clayey, sandy GRAVEL; moist to wet; (Qls) CL/GC.
- Wet, slightly clayey, silty, gravelly sand layer from 31.7 to 32 feet.
- Boulder from 39.4 to 40.8 feet.

BOTTOM OF BORING
COMPLETED 9/18/2009

NOTE: Blow counts may be locally artificially high due to the presence of gravel, cobbles, and boulders.

LEGEND

- Sample Not Recovered
- Standard Penetration Test
- Rock Core
- Grab Sample

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Index Galena Flood Repairs Project
Milepost 6.4 to 6.9
Snohomish County, Washington

LOG OF BORING B-11

December 2012
21-1-21116-031

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants
FIG. A-20
Sheet 2 of 2
SOIL DESCRIPTION
Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water</th>
<th>Depth, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>†</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0</td>
<td>†</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOPSOIL:
Soft to medium stiff, gray, silty CLAY; wet; disturbed appearance, scattered cobbles, laminated sand seams less than 0.5-inch-thick; (Qvrl - disturbed) CL/CH. Note: Blow counts may be artificially high due to the presence of cobbles.
- Cobble/boulder at 4.5 feet.

Stiff to very stiff, gray, silty CLAY; moist; scattered cobbles and boulders; scattered silty, fine to medium sand seams; laminated with fine sand; (Qvrl) CL/CH.
- Water seep at 5 feet.
- Cobble/boulder at 6.5 feet.
Note: Blow counts may be artificially high due to the presence of cobbles.

BOTTOM OF BORING
COMPLETED 7/27/2010
Note: Hand boring located in the field by measuring distances from surveyed points.

PENETRATION RESISTANCE (blows/6 in.)
▲ Hammer Wt. & Drop: 140 lbs / 30 inches

LEGEND
* Sample Not Recovered
† Porter Penetration Test Sample
2.5” O.D. Thin-Walled Tube

NOTES
1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

TOPSOIL:
Stiff to very stiff, gray, silty CLAY; moist; scattered cobbles and boulders, silty sand laminations; (Qvrl) CL/CH.

Note: Blow counts may be artificially high due to the presence of cobbles and boulders.
- Cobble/boulder at 4.3 feet.

BOTTOM OF BORING COMPLETED 7/27/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

PENETRATION RESISTANCE (blows/6 in.)

▲ Hammer Wt. & Drop: 140 lbs / 30 inches

LEGEND
* Sample Not Recovered
Ⅱ Porter Penetration Test Sample

% Fines (<0.075mm)
% Water Content

NOTES
1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

Stiff, gray, silty CLAY; moist; scattered cobbles and boulders, silty sand laminations; (Qvrl) CL/CH.

Note: Blow counts may be artificially high due to the presence of cobbles and boulders.

BOTTOM OF BORING
COMPLETED 7/27/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

LEGEND
* Sample Not Recovered
† Porter Penetration Test Sample
□ 2.5" O.D. Thin-Walled Tube

% Fines (<0.075mm)
% Water Content

NOTES
1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water Depth, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>1.5</td>
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</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>3.0</td>
<td></td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

Brown, sandy SILT to silty SAND, trace of gravel; moist; scattered organics; (Topsoil ML/SM.

Brown, slightly silty, sandy GRAVEL; moist; abundant cobbles; (Qal) GP-GM.

BOTTOM OF BORING COMPLETED 7/28/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

LEGEND

* Sample Not Recovered

- % Fines (<0.075mm)
- % Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Index Galena Flood Repairs Project
Milepost 6.4 to 6.9
Snohomish County, Washington

LOG OF HAND BORING HB-2A

December 2012 21-1-21116-031

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants FIG. A-24
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

Loose, brown, sandy SILT to silty SAND, trace of gravel; moist; scattered organics; (Topsoil) ML/SM.

Very dense, brown, slightly silty, sandy GRAVEL; moist; primarily cobbles; (Qal) GP-GM.

Note: Blow counts may be artificially high due to the presence of gravel and cobbles.

BOTTOM OF BORING COMPLETED 7/28/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

LEGEND

* Sample Not Recovered

I Porter Penetration Test Sample

% Fines (<0.075mm)

% Water Content

PENETRATION RESISTANCE (blows/6 in.)

Hammer Wt. & Drop: 140 lbs / 30 inches

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Loose, dark brown, sandy SILT; moist; scattered to abundant organics; (Topsoil) ML.

Loose, brown, silty, fine to medium SAND, trace of gravel; moist; slightly gravelly near base; (Qal) SM.

Very dense, brown, slightly silty, sandy GRAVEL; moist; cobbles; (Qal) GP-GM.

Note: Blow counts may be artificially high due to the presence of gravel and cobbles.

BOTTOM OF BORING
COMPLETED 7/28/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

PENETRATION RESISTANCE (blows/6 in.)

△ Hammer Wt. & Drop: 140 lbs / 30 inches

LEGEND
★ Sample Not Recovered
شرع Porter Penetration Test Sample

% Fines (<0.075mm)
% Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

Index Galena Flood Repairs Project
Milepost 6.4 to 6.9
Snohomish County, Washington

LOG OF HAND BORING HB-2C

December 2012

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-26
**SOIL DESCRIPTION**

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water Depth, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td></td>
<td></td>
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<tr>
<td>3.5</td>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Loose, dark brown, sandy SILT; moist; abundant to scattered organics; (Topsoil) ML.
Soft, gray, clayey SILT to silty CLAY; moist; seams of organics; (Qm) ML/CL.

Loose, brown, silty, fine to medium SAND; trace of gravel; moist; (Qal) SM.

Very dense, brown, slightly silty, sandy GRAVEL; moist; cobbles; (Qal) GP-GM.

Note: Blow counts may be artificially high due to the presence of gravel and cobbles.

BOTTOM OF BORING COMPLETED 7/28/2010

Note: Hand boring located in the field by measuring distances from surveyed points.

---

**LEGEND**

* Sample Not Recovered

I Porter Penetration Test Sample

◇ % Fines (<0.075mm)

● % Water Content

---

**NOTES**

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.

---

**LOG OF HAND BORING HB-2D**

December 2012 21-1-21116-031

SHANNON & WILSON, INC. Geotechnical and Environmental Consultants FIG. A-27

Index Galena Flood Repairs Project
Milepost 6.4 to 6.9
Snohomish County, Washington
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water Depth, ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Brown to dark brown, slightly sandy, slightly clayey SILT; moist to wet; abundant organics; (Topsoil) ML.

Loose to dense, brown, silty, fine to medium SAND, trace of clay; moist; scattered roots and organics, scattered cobbles, increasing silt with depth; (Qtal) SM.

BOTTOM OF BORING COMPLETED 2/9/2012

Notes:

a) Boring HB-3a was stopped at 1.5 feet after encountering a large cobble or boulder.
   We did not collect soil from HB-3a.

b) Hand boring located in the field by measuring distances from surveyed points.

LEGEND

* Sample Not Recovered
☐ Grab Sample

% Fines (<0.075mm)
% Water Content

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
4. The hole location was measured from existing site features and should be considered approximate.
SOIL DESCRIPTION

Refer to the report text for a proper understanding of the subsurface materials and drilling methods. The stratification lines indicated below represent the approximate boundaries between material types, and the transition may be gradual.

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Symbol</th>
<th>Samples</th>
<th>Ground Water Depth, ft.</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
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</tr>
<tr>
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</tr>
<tr>
<td>6.8</td>
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<td></td>
<td>60</td>
</tr>
</tbody>
</table>

TOPSOIL:

Loose to medium dense, light brown, silty, fine to medium SAND; moist; scattered roots; (Qtal) SM.

Dense, brown, trace of silt to slightly silty, fine to medium SAND; moist; scattered roots; (Qtal) SP-SM/SP.

Red-brown, slightly silty, sandy, fine GRAVEL; moist; iron-oxide staining, scattered roots; (Qtal) GP-GM.

BOTTOM OF BORING
COMPLETED 2/9/2012

Note: Hand boring located in the field by measuring distances from surveyed points.

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. USCS designation is based on visual-manual classification and selected lab testing.
4. The hole location was measured from existing site features and should be considered approximate.

LOG OF HAND BORING HB-4

December 2012

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

21-1-21116-031

REV 3
APPENDIX B

ROCK CORE PHOTOGRAPHS
APPENDIX B

ROCK CORE PHOTOGRAPHS

TABLE OF CONTENTS

FIGURES

| B-1   | B-1L Core Photos       |
| B-2   | B-2L Core Photos (2 sheets) |
| B-3   | B-3L Core Photos (2 sheets) |
| B-4   | B-4L Core Photos       |
| B-5   | B-5L Core Photos       |
| B-6   | B-6L Core Photos       |
| B-7   | B-7L Core Photos (2 sheets) |
| B-8   | B-8L Core Photos (2 sheets) |
| B-9   | B-9L Core Photos (2 sheets) |
| B-10  | B-10L Core Photos      |
| B-11  | B-1 Core Photos (2 sheets) |
| B-12  | B-2 Core Photos (2 sheets) |
| B-13  | B-3 Core Photos        |
| B-14  | B-4 Core Photos        |
| B-15  | B-5 Core Photos (3 sheets) |
| B-16  | B-6 Core Photos (2 sheets) |
| B-17  | B-7 Core Photos (2 sheets) |
| B-18  | B-8 Core Photos (2 sheets) |
|       | B-11 Core Photos       |