Site: SOUTHPORT EIP
Sounding: BCI-11-CPT1
Engineer: D.BREMERMAN
Date: 3/22/2011 09:55

SBT: Soil Behavior Type (Robertson 1990)
Site: SOUTHPORT EIP
Sounding: BCI-11CPT5
Engineer: D.BREMERMAN
Date: 3/17/2011 10:36

Max. Depth: 88.911 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Site: SOUTHPORT EIP
Sounding: BCI-11CPT5
Engineer: D. BREMERMAN
Date: 3/17/2011 10:36

Max. Depth: 88.911 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Site: SOUTHPORT EIP
Sounding: BCI-11-CPT11
Date: 3/22/2011 08:11

Max. Depth: 79.396 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)
Appendix B

Laboratory Tests

Summary of Results
### Laboratory Testing Summary

<table>
<thead>
<tr>
<th>Exploration I.D.</th>
<th>Depth (feet)</th>
<th>Sample Type</th>
<th>USCS Classification</th>
<th>Pocket Penetrometer (tsf)</th>
<th>N Value (field)</th>
<th>Moisture Content (%)</th>
<th>Wet Density, $\gamma_w$ (pcf)</th>
<th>Dry Density, $\gamma_d$ (pcf)</th>
<th>Percent Passing #200</th>
<th>LL</th>
<th>PI</th>
<th>Hydraulic Conductivity, k (cm/sec)</th>
<th>Hydrometer Test Performed</th>
<th>Consolidation Test Performed</th>
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LIQUID AND PLASTIC LIMITS TEST REPORT

Dashed line indicates the approximate upper limit boundary for natural soils.

SOIL DATA

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<th>SYMBOL</th>
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<th>SAMPLE NO.</th>
<th>DEPTH</th>
<th>NATURAL WATER CONTENT (%)</th>
<th>PLASTIC LIMIT (%)</th>
<th>LIQUID LIMIT (%)</th>
<th>PLASTICITY INDEX (%)</th>
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Blackburn Consulting
W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No.: 1978.2
Particle Size Distribution Report

GRAIN SIZE - mm.

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<th>% Sand</th>
<th>% Fines</th>
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Soil Description
Lean CLAY with SAND, dark olive brown

Atterberg Limits
PL = 23  LL = 33  PL = 10

Coefficients
D85 =  D60 =  D50 =
D30 =  D15 =  D10 =
C_u =

Classification
USCS = CL  AASHTO =

Remarks

Sample No.: 1a  Source of Sample: B1  Date: 3.67-4.28
Location:  Elev./Depth:  Blackburn Consulting
Client: WSAFCA  Project: Southport EIP TO2
Project No: 1978.2  Figure
Particle Size Distribution Report

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Soil Description

SILT, dark olive brown

Atterberg Limits

| PL= 26  | LL= 36  | PI= 10 |
| D85=    | D60=    | D50=    |
| D30=    | D15=    | D10=    |
| C_u=    | C_i=    | AASHTO= |

Classification

USCS= ML

Remarks

Sample No.: 2b
Source of Sample: B1
Date: 6.56-7.23'
Elev./Depth: 6.56-7.23'

Blackburn Consulting
W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2
Figure
Particle Size Distribution Report

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<th>PASS? (X=NO)</th>
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Soil Description
SILTY SAND, very dark grayish brown

Atterberg Limits
PL=      
LL=      
Pl=      

Coefficients
D85= 0.1869  
D60= 0.1383  
D50= 0.1246  
D15= 0.0549  
D10= 0.0326  
C_u= 4.25    
C_c= 2.02

USCS=  
AASHTO=

Classification
Remarks

Sample No.: 4b  
Location:  
Source of Sample: B1  
Date:  
Elev./Depth: 16.5-17.2'

Blackburn Consulting  
W. Sacramento, CA  
Client: WSAFCA  
Project: Southport EIP TO2  
Project No: 1978.2  
Figure
Particle Size Distribution Report

GRAIN SIZE - mm.

<table>
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<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse</td>
<td>Fine</td>
<td>Coarse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

76.8  17.5  5.0

SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO)
--------- |-------------- |-------------- |-------
#20    | 100.0        |              |       |
#40    | 99.3         |              |       |
#60    | 87.0         |              |       |
#100   | 33.2         |              |       |
#140   | 25.8         |              |       |
#200   | 22.5         |              |       |
0.0329 mm. | 14.3       |              |       |
0.0211 mm. | 12.2       |              |       |
0.0111 mm. | 8.9        |              |       |
0.0089 mm. | 7.7        |              |       |
0.0059 mm. | 5.4        |              |       |
0.0032 mm. | 4.4        |              |       |
0.0013 mm. | 2.0        |              |       |

Soil Description

SILTY SAND, black

Atterberg Limits

PL=  
LL=  
Pl=

Coefficients

D90= 0.2754  D85= 0.2443  D60= 0.1952
D50= 0.1794  D30= 0.1413  D15= 0.0364
D10= 0.0137  Cu= 14.27  Cc= 7.48

Classification

USCS= SM  AASHTO=

Remarks

Source of Sample: B1  Depth: 40-41.5'
Sample Number: 8  Date: 5-11-11

Blackburn Consulting

W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2

Figure
**SOIL DATA**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SOURCE</th>
<th>SAMPLE NO.</th>
<th>DEPTH</th>
<th>NATURAL WATER CONTENT (%)</th>
<th>PLASTIC LIMIT (%)</th>
<th>LIQUID LIMIT (%)</th>
<th>PLASTICITY INDEX (%)</th>
<th>USCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>●</td>
<td>B2</td>
<td>1b</td>
<td>3.5-4.2'</td>
<td>23</td>
<td>34</td>
<td>11</td>
<td></td>
<td>CL</td>
</tr>
<tr>
<td>■</td>
<td>B2</td>
<td>2b</td>
<td>6.53-7.2'</td>
<td>20</td>
<td>36</td>
<td>16</td>
<td></td>
<td>CL</td>
</tr>
<tr>
<td>▲</td>
<td>B2</td>
<td>3b</td>
<td>12.45-12.95'</td>
<td>NP</td>
<td>NP</td>
<td></td>
<td></td>
<td>SM</td>
</tr>
<tr>
<td>●</td>
<td>B2</td>
<td>3c</td>
<td>12.95-13.5'</td>
<td>NP</td>
<td>NP</td>
<td></td>
<td></td>
<td>ML</td>
</tr>
</tbody>
</table>

Blackburn Consulting

W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No.: 1978.2

Figure
Particle Size Distribution Report

Soil Description
Lean CLAY with SAND, olive brown

Atterberg Limits
PL = 23
LL = 34
Pl = 11

Coefficients
D85 =
D60 =
D30 =
D15 =
C15 =
C60 =

Classification
USCS = CL
AASHTO =

Remarks

SIEVE SIZE
#200

PERCENT FINER
84.6

SPEC.* PERCENT
(=NO)

% +3"
% Gravel
% Sand
% Fines

Coarse Fine
Coarse Medium Fine
Silt Clay

84.6

Sample No.: 1b
Source of Sample: B2
Date: Elev./Depth: 3.5-4.2'

Blackburn Consulting
W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2
Figure
# Particle Size Distribution Report

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
<td>93.3</td>
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<td></td>
</tr>
</tbody>
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## Soil Description
Lean CLAY, dark olive brown

### Atterberg Limits
- PL = 20
- LL = 36
- PI = 16

### Coefficients
- D85 =
- D60 =
- D30 =
- D15 =
- C6 =
- C15 =

### Classification
USCS = CL
AASHTO =

### Remarks

---

Sample No.: 2b  
Source of Sample: B2  
Date:  
Elev./Depth: 6.53-7.2'

Blackburn Consulting  
W. Sacramento, CA

Client: WSAFCA  
Project: Southport E&P TO2  
Project No: 1978.2  
Figure
Particle Size Distribution Report

% +3" | % Gravel | % Sand | % Fines
--- | --- | --- | ---
Coarse | Fine | Coarse | Medium | Fine | Silt | Clay

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.% PERCENT</th>
<th>PASS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
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</tr>
</tbody>
</table>

Soil Description
SILTY SAND, dark olive browa

Atterberg Limits
PL = NP
LL =
Pl =

Coefficients
D85 =
D60 =
D50 =
D10 =
C15 =
C10 =

Classification
USCS = SM
AASHTO =

Remarks

Sample No.: 3b
Location:
Source of Sample: B2
Date: 5-10-11
Elev./Depth: 12.45-12.95'

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2

Blackburn Consulting
W. Sacramento, CA

* (no specification provided)
### Soil Description

SANDY SILT, dark brown

### Atterberg Limits

- **PL** = NP
- **LL** = Pl

### Coefficients

- **D₈₅** = D₆₀
- **D₃₀** = D₁₅
- **Cₚ** = C₁₀

### Classification

- **USCS** = ML
- **AASHTO** = Remarks

---

**Sample No.:** 3c  
**Source of Sample:** B2  
**Location:**  
**Date:**  
**Elev./Depth:** 12.95-13.5'

**Blackburn Consulting**  
**W. Sacramento, CA**  
**Client:** WSAFCA  
**Project:** Southport EIP TO2  
**Project No.:** 1978.2  
**Figure**
Particle Size Distribution Report

GRAIN SIZE - mm.

<table>
<thead>
<tr>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
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</thead>
<tbody>
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<td></td>
<td>Coarse</td>
<td>Fine</td>
<td>Coarse</td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
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</table>

SIEVE SIZE

<table>
<thead>
<tr>
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<th>PERCENT FINER</th>
<th>SPEC.&quot; PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#20</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#40</td>
<td>99.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60</td>
<td>84.8</td>
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<td></td>
</tr>
<tr>
<td>#100</td>
<td>32.7</td>
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<td></td>
</tr>
<tr>
<td>#140</td>
<td>19.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>13.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0348 mm.</td>
<td>9.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0224 mm.</td>
<td>6.9</td>
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</tr>
<tr>
<td>0.0130 mm.</td>
<td>5.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0092 mm.</td>
<td>4.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0066 mm.</td>
<td>3.9</td>
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<td>0.0031 mm.</td>
<td>3.1</td>
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<tr>
<td>0.0013 mm.</td>
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<tr>
<td>0.0010 mm.</td>
<td>1.7</td>
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</tbody>
</table>

* (no specification provided)

Source of Sample: B2    Depth: 25.0-26.5'
Sample Number: 5

Soil Description

SILTY SAND, dark greenish gray

Atterberg Limits

\[ PL = \frac{D_{90} - D_{10}}{D_{90} - D_{50}} \]

Coefficients

\[ LL = \frac{D_{90} - D_{50}}{D_{50} - D_{10}} \]

\[ UC = \frac{D_{50}}{D_{10}} - 1 \]

Classification

USCS= SM    AASHTO=

Remarks

Date: 5-3-11

Blackburn Consulting

W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2
Figure
# Particle Size Distribution Report

## Soil Description
- Poorly graded SAND with SILT, dark olive gray

## Atterberg Limits
- PL = \_
- LL = \_
- PI = \_

## Coefficients
- D_{90} = 3.8311
- D_{50} = 0.3108
- D_{10} = 0.1208
- C_{L} = 2.89
- C_{C} = 1.39

## Classification
- USCS: SP-SM
- AASHTO:

## Remarks

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
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<td>#4</td>
<td>91.5</td>
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<tr>
<td>#10</td>
<td>85.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20</td>
<td>82.4</td>
<td></td>
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<tr>
<td>#40</td>
<td>74.3</td>
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<td>32.1</td>
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<tr>
<td>#100</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#140</td>
<td>9.4</td>
<td></td>
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</tr>
<tr>
<td>#200</td>
<td>7.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0348 mm.</td>
<td>3.3</td>
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</tr>
<tr>
<td>0.0222 mm.</td>
<td>2.5</td>
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</tr>
<tr>
<td>0.0129 mm.</td>
<td>1.8</td>
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<td>0.0092 mm.</td>
<td>1.2</td>
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<tr>
<td>0.0065 mm.</td>
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<tr>
<td>0.0032 mm.</td>
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</tr>
<tr>
<td>0.0014 mm.</td>
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</table>

* (no specification provided)

Source of Sample: B2  
Sample Number: 8  
Depth: 70.0-71.5'  
Date: 5-12-11

 BlackBerry Consulting  
 W. Sacramento, CA

Client: WSAFCA  
Project: Southport EIP TO2  
Project No: 1978.2  
Figure
LIQUID AND PLASTIC LIMITS TEST REPORT

Dashed line indicates the approximate upper limit boundary for natural soils

SOIL DATA

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SOURCE</th>
<th>SAMPLE NO.</th>
<th>DEPTH</th>
<th>NATURAL WATER CONTENT (%)</th>
<th>PLASTIC LIMIT (%)</th>
<th>LIQUID LIMIT (%)</th>
<th>PLASTICITY INDEX (%)</th>
<th>USCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>●</td>
<td>B3</td>
<td>1c</td>
<td>4.2-4.9'</td>
<td></td>
<td>24</td>
<td>40</td>
<td>16</td>
<td>CL</td>
</tr>
<tr>
<td>■</td>
<td>B3</td>
<td>3b</td>
<td>12.5-13.2'</td>
<td></td>
<td>24</td>
<td>50</td>
<td>26</td>
<td>CH</td>
</tr>
<tr>
<td>▲</td>
<td>B3</td>
<td>4b</td>
<td>17.4-17.9'</td>
<td></td>
<td>28</td>
<td>53</td>
<td>25</td>
<td>CH</td>
</tr>
<tr>
<td>●</td>
<td>B3</td>
<td>5a</td>
<td>26.8-27.5'</td>
<td></td>
<td>24</td>
<td>46</td>
<td>22</td>
<td>CL</td>
</tr>
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</table>
### Particle Size Distribution Report

<table>
<thead>
<tr>
<th>GRAIN SIZE - mm.</th>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coarse</td>
<td>Fine</td>
<td>Silt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coarse</td>
<td>Medium</td>
<td>Clay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fine</td>
<td></td>
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<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.</th>
<th>PASS? (X=NO)</th>
<th>Soil Description</th>
<th>Atterberg Limits</th>
<th>Coefficients</th>
<th>Classification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
<td>82.8</td>
<td></td>
<td></td>
<td>Lean CLAY, dark olive brown</td>
<td>PL = 24</td>
<td></td>
<td>USCS = CL</td>
<td></td>
</tr>
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<td></td>
<td>LL = 40</td>
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<td>P1 = 16</td>
<td>D60=</td>
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<td>D30=</td>
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<td>D15=</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cu=</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>AASHTO=</td>
<td></td>
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</tr>
</tbody>
</table>

* (no specification provided)

Sample No.: 1c  
Location:  
Source of Sample: B3  
Date:  
Elev./Depth: 4.2-4.9'

Blackburn Consulting

W. Sacramento, CA

Client: WSAFCA  
Project: Southport EIP TO2  
Project No: 1978.2  
Figure
Particle Size Distribution Report

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC. PERCENT</th>
<th>PASS? (X=NO)</th>
<th>Soil Description</th>
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</thead>
<tbody>
<tr>
<td>#200</td>
<td>99.2</td>
<td></td>
<td></td>
<td>Fat CLAY, dark olive brown</td>
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</tbody>
</table>

Atterberg Limits

| PL = 24 | LL = 50 | PI = 26 |

Coefficients

<table>
<thead>
<tr>
<th>D85</th>
<th>D60</th>
<th>D50</th>
</tr>
</thead>
<tbody>
<tr>
<td>D30</td>
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<tr>
<td>Cu</td>
<td>Cc</td>
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</tr>
</tbody>
</table>

USCS = CH

Classification

AASHTO =

Remarks

Sample No.: 3b  Location:  Source of Sample: B3  Date: Elev./Depth: 12.5-13.2'

Client: WSAFCA  Project: Southport EIP TO2  Project No: 1978.2

Blackburn Consulting  W. Sacramento, CA  Figure
**Particle Size Distribution Report**

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
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<tbody>
<tr>
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<table>
<thead>
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<th>GRAIN SIZE - mm.</th>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse Fine</td>
<td>Coarse Medium Fine</td>
<td>Silt Clay</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.5</td>
</tr>
</tbody>
</table>

**Soil Description**

Fat CLAY, dark olive brown

**Atterberg Limits**

PL = 28

LL = 53

Pl = 25

**Coefficients**

D₈₅ =

D₆₀ =

D₅₀ =

D₃₀ =

Cₜ =

**Classification**

USCS = CH

AASHTO =

**Remarks**

---

Sample No.: 4b  
Source of Sample: B3  
Date:  
Elev./Depth: 17.4-17.9'

Blackburn Consulting  
W. Sacramento, CA  
Client: WSAFCA  
Project: Southport EIP TO2  
Project No: 1978.2  
Figure
Particle Size Distribution Report

<table>
<thead>
<tr>
<th>GRAIN SIZE - mm.</th>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
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<tbody>
<tr>
<td></td>
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<td>Fine</td>
<td>Coarse</td>
<td>Medium</td>
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<table>
<thead>
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<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
<th>Soils Description</th>
<th>Atterberg Limits</th>
<th>Coefficients</th>
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<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>#200</td>
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<td>Lean CLAY, dark olive brown</td>
<td>PL = 24</td>
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<td>PI = 22</td>
<td>D30=</td>
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<td></td>
<td></td>
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<td></td>
<td>Cc=</td>
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</tr>
</tbody>
</table>

* (no specification provided)

Sample No.: 5a  Source of Sample: B3  Date: 26.8-27.5'
Location: Blackburn Consulting  Client: WSAFCA  Elev./Depth: 26.8-27.5'
W. Sacramento, CA  Project: Southport EIP TO2  Figure  Project No: 1978.2
Particle Size Distribution Report

GRAIN SIZE - mm.

<table>
<thead>
<tr>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse</td>
<td>Fine</td>
<td>Medium</td>
</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20</td>
<td>99.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#40</td>
<td>99.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60</td>
<td>97.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#100</td>
<td>80.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#140</td>
<td>63.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>48.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Soil Description: SILTY SAND, olive brown
- Atterberg Limits
  - PL =
  - LL =
  - PI =
- Coefficients
  - D_90 = 0.1897
  - D_50 = 0.0777
  - D_10 =
  - D_95 = 0.1668
  - D_50 =
  - D_15 =
  - Cu =
  - Cc =
- Classification: AASHTO=
- Remarks

Source of Sample: B3  Depth: 46.6-47.3'  Date: 5-2-11
Sample Number: 76

Blackburn Consulting
W. Sacramento, CA
Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2  Figure
**Particle Size Distribution Report**

**GRAIN SIZE - mm.**

<table>
<thead>
<tr>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse</td>
<td>Fine</td>
<td>Coarse</td>
<td>Medium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
<td>93.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Soil Description**

SILT, dark olive brown

**Atterberg Limits**

\[
\begin{align*}
\text{PL} & = 26 \\
\text{LL} & = 37 \\
\text{PI} & = 11 \\
\end{align*}
\]

**Coefficients**

\[
\begin{align*}
D85 & = \\
D60 & = \\
D30 & = \\
D15 & = \\
C_{u} & = \\
\end{align*}
\]

**Classification**

\[
\begin{align*}
\text{USCS} & = \text{ML} \\
\text{AASHTO} & = \text{ML} \\
\end{align*}
\]

**Remarks**

* (no specification provided)

Sample No.: 1b  
Source of Sample: B4  
Date:  
Elev./Depth: 3.5-4.2'

Blackburn Consulting  
W. Sacramento, CA  
Client: WSAFCA  
Project: Southport EIP TO2  
Project No.: 1978.2  
Figure
### Particle Size Distribution Report

**Sieve Size**  | **Percent Finer** | **Spec.** | **Pass? (X=NO)** | **Soil Description**
---|---|---|---|---
#200 | 23.9 | | | SILTY SAND, dark yellowish brown

**Atterberg Limits**
- PL = 29
- LL = 26
- PI = NP

**Coefficients**
- D85 = D60 =
- D30 = D15 =
- Cu = Cc =

**Classification**
- USCS = SM
- AASHTO =

**Remarks**

---

**Sample No.:** 2a  
**Source of Sample:** B4  
**Date:**
- Elev./Depth: 8.8-9.5'

---

**Blackburn Consulting**

**W. Sacramento, CA**

**Client:** WSAFCA  
**Project:** Southport EIP TO2  
**Project No.:** 1978.2  
**Figure**
### Soil Description

SANDY SILT, olive brown

### Atterberg Limits

- PL = 27
- LL = 27
- PI = NP

### Coefficients

- D85 = D60 =
- D30 = D15 =
- Cu = Cc =

### Classification

- USCS = ML
- AASHTO =

### Remarks

* (no specification provided)

---

**Sample No.:** 3a  
**Source of Sample:** B4  
**Date:**  
**Elev./Depth:** 13.8-14.5'

---

**Blackburn Consulting**  
**W. Sacramento, CA**

**Client:** WSAFCA  
**Project:** Southport EIP TO2  
**Project No.:** 1978.2
## Particle Size Distribution Report

### Soil Description
SANDY SILT, very dark gray

### Atterberg Limits
- PL = 29
- LL = 26
- PI = NP

### Coefficients
- $D_{90}$
- $D_{50}$
- $D_{10}$

### Classification
- USCS = ML
- AASHTO =

### Remarks

<table>
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<tr>
<th>Source of Sample:</th>
<th>23.5-25.0'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number:</td>
<td>6</td>
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<tr>
<td>Client:</td>
<td>WSAFCA</td>
</tr>
<tr>
<td>Project:</td>
<td>Southport EIP TO2</td>
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<tr>
<td>Project No:</td>
<td>1978.2</td>
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**Date:** 5-11-11

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<th>PASS?</th>
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<th>SPEC.*</th>
<th>PASS?</th>
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</thead>
<tbody>
<tr>
<td>#200</td>
<td>54.4</td>
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</table>

*(no specification provided)*

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<table>
<thead>
<tr>
<th>GRAIN SIZE - mm.</th>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>Coarse</td>
<td>Fine</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

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**Blackburn Consulting**

**W. Sacramento, CA**

---
Particle Size Distribution Report

GRAIN SIZE - mm.

<table>
<thead>
<tr>
<th>% +3&quot;</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Fines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse</td>
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<td>Coarse</td>
</tr>
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<td>0.0</td>
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<td>0.0</td>
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</tbody>
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**Sieve**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20</td>
<td>95.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#40</td>
<td>71.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60</td>
<td>31.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#100</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#140</td>
<td>12.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0350 mm.</td>
<td>7.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0223 mm.</td>
<td>6.9</td>
<td></td>
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</tr>
<tr>
<td>0.0130 mm.</td>
<td>4.9</td>
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<tr>
<td>0.0093 mm.</td>
<td>3.9</td>
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<tr>
<td>0.0058 mm.</td>
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<tr>
<td>0.0032 mm.</td>
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</tr>
<tr>
<td>0.0013 mm.</td>
<td>1.9</td>
<td></td>
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</tr>
<tr>
<td>0.0001 mm.</td>
<td>1.7</td>
<td></td>
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</tbody>
</table>

* (no specification provided)

**Soil Description**

Poorly graded SAND with SILT, dark greenish gray

**Atterberg Limits**

<table>
<thead>
<tr>
<th>PL</th>
<th>LL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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**Coefficients**

<table>
<thead>
<tr>
<th>D90</th>
<th>D85</th>
<th>D60</th>
<th>D15</th>
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</thead>
<tbody>
<tr>
<td>0.6422</td>
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</tr>
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<td>0.3230</td>
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<td>0.0679</td>
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**Classification**

<table>
<thead>
<tr>
<th>USCS</th>
<th>AASHTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-SM</td>
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</tr>
</tbody>
</table>

**Remarks**

Source of Sample: B4
Sample Number: 7
Depth: 37.0-38.5'

Date: 5-3-11

Blackburn Consulting
W. Sacramento, CA

Client: WSAFCA
Project: Southport EIP TO2
Project No: 1978.2
Figure
Particle Size Distribution Report

**Soil Description**
Lean CLAY with SAND, dark olive brown

**Atterberg Limits**
- PL = 25
- LL = 41
- PI = 16

**Coefficients**
- D₈₅ =
- D₆₀ =
- D₅₀ =
- D₃₀ =
- C₆₀ =

**Classification**
- AASHTO =

**Remarks**

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
<td>83.7</td>
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</table>

*(no specification provided)*

Sample No.: 1c  
Location:  
Source of Sample: B5  
Date:  
Elev./Depth: 4.17-4.9'

Blackburn Consulting  
W. Sacramento, CA

Client: WSAFCA  
Project: Southport EIP TO2  
Project No: 1978.2  
Figure
### Particle Size Distribution Report

#### Soil Description
Lean CLAY, dark olive brown

#### Atterberg Limits
- **PL**: 23
- **LL**: 36
- **Pl**: 13

#### Coefficients
- **D₈⁵**: \( D_{60} \)
- **D₃⁰**: \( D_{15} \)
- **Cₜ**: \( C_{C} \)

#### Classification
AASHTO:

#### Remarks

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC. * PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#200</td>
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</tbody>
</table>

* (no specification provided)

---

**Sample No.:** 2b
**Source of Sample:** B5
**Date:**
**Elev./Depth:** 6.5-7.2

---

**Blackburn Consulting**

**W. Sacramento, CA**

**Client:** WSAFCA
**Project:** Southport EIP TO2

**Project No.:** 1978.2
**Particle Size Distribution Report**

**Sieve SIZE** | **Percent Finer** | **Spec.*** | **Pass?** (X=NO)  
--- | --- | --- | ---  
#200 | 93.1 |  |  

**Soil Description**

SILT, olive brown

**Atterberg Limits**

<table>
<thead>
<tr>
<th>PL</th>
<th>LL</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>40</td>
<td>NP</td>
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</table>

**Coefficients**

<table>
<thead>
<tr>
<th>D90</th>
<th>D85</th>
<th>D60</th>
<th>D15</th>
<th>Cc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Classification**

USCS = ML  
AASHTO =   

**Remarks**

---

**Source of Sample:** B5  
**Depth:** 10.4-10.9'  
**Sample Number:** 3c

**Client:** WSAFCA  
**Project:** Southport EIP TO2  
**Project No:** 1978.2  
**Date:** 5-16-11  
**Figure**

---

---
Particle Size Distribution Report

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT FINER</th>
<th>SPEC.* PERCENT</th>
<th>PASS? (X=NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10</td>
<td>100.0</td>
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<tr>
<td>#20</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#40</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60</td>
<td>99.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#100</td>
<td>98.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#140</td>
<td>95.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#200</td>
<td>90.9</td>
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<td></td>
</tr>
<tr>
<td>0.0327 mm.</td>
<td>18.7</td>
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</tr>
<tr>
<td>0.0214 mm.</td>
<td>13.7</td>
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</tr>
<tr>
<td>0.0126 mm.</td>
<td>10.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0090 mm.</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0063 mm.</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0032 mm.</td>
<td>5.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0012 mm.</td>
<td>5.4</td>
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<td></td>
</tr>
</tbody>
</table>

*(no specification provided)*

Source of Sample: B5  Depth: 25.2-25.9'  Sample Number: 6c  Date: 5-17-11

Soil Description
SILT, olive brown

Atterberg Limits
- PL=
- LL=
- PI=

Coefficients
- D_90= 0.0735
- D_50= 0.0470
- D_10= 0.0112
- D_85= 0.0676
- D_30= 0.0384
- D_15= 0.0243
- Cu= 4.63
- Cc= 2.56

Classification
AASHTO=

Remarks

Blackburn Consulting
W. Sacramento, CA

Client: WSAFCA  Project: Southport EIP TO2

Project No: 1978.2  Figure